

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

Volume 18
Number 12

DECEMBER, 1935

40 cents a copy
\$3.00 a year

CONTENTS

- SOME OF THE NEWER DEVELOPMENTS IN HYPERTHYROIDISM AND HYPERPARATHYROIDISM.
Frank H. Lahey, M.D., Boston, Massachusetts 761
- SIMPLIFIED OBSTETRIC CARE.
E. D. Plass, M.D., Iowa City, Iowa 768
- THE PRESENT STATUS OF CLINICAL ALLERGY.
H. L. Alexander, M.D., St. Louis, Missouri 773

- CONTINUOUS INTRAVENOUS INFUSION.
Thomas G. Orr, M.D., Kansas City, Kansas 778
- PHENOLPHTHALEIN ERUPTIONS.
Carl W. Laymon, M.D., Ph.D., Minneapolis 782
- THE EXTERNAL FRONTO-ETHMO-SPHENOID OPERATION.
Harold I. Lillie, M.D., and *Henry L. Williams, M.D.*, Rochester 786

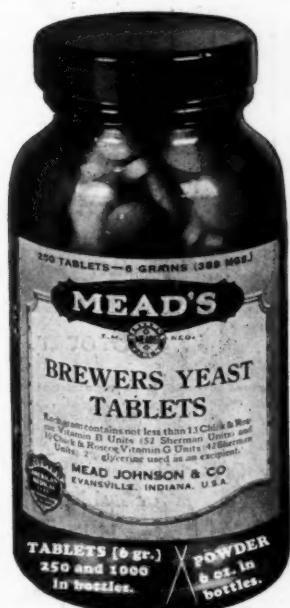
(Continued on page III)



ACCEPTED

EFFICIENT SOURCE OF VITA-

MINS B and G for supplementing diets of pregnant/nursing mothers and for breast/bottle-fed infants. MEAD'S BREWERS YEAST is advertised only to physicians without dosage directions or package circulars. Servamus Fidem — "We are Keeping the Faith."



Please enclose professional card when requesting samples of Mead Johnson products to cooperate in preventing their unauthorized persons

Your Greatest Gift



Your greatest gift to mankind—and especially your patients, Doctor—is not a material thing that can be used to fill stockings or left on the hearthstone to be discovered Christmas morning. It's helping your patients back to good health and keeping them that way.

And OUR greatest gift—as we see it—is to produce good, nutritious and wholesome foods . . . the kind you feel confident in recommending. Such are Fairway Fine Foods—and especially those listed below which bear the Seal of Acceptance of your A.M.A. Committee on Foods.

Any of these Fairway products can be purchased at your—and your patient's—nearest Fairway Grocer.

Fairway Strained Vegetables for Babies
Fairway Evaporated Milk
Fairway Tomato Juice
Fairway Syrup
Fairway Breakfast Wheat Cereal



DISTRIBUTED BY

**TWIN CITY WHOLESALE
GROCER COMPANY**

2285 University Ave.
Saint Paul - - - - - Minnesota

M

Journal

Volu

I W
as
thyro
the
thyro
prob

In
had
dedu
oper
oper
tient
4,521
mort
hyp
per c

I
deali
what
rate
belie
strik
think
ader
degr
it te
advan

I
ager
pati
case
man
thyro
with

*R
Medi

Dec

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

Volume 18

DECEMBER, 1935

Number 12

SOME OF THE NEWER DEVELOPMENTS IN HYPERTHYROIDISM AND HYPERPARATHYROIDISM*

FRANK H. LAHEY, M.D.

Boston, Massachusetts

I WISH to present to you some of the newer aspects of thyroid disease and hyperparathyroidism. I wish to present, also, some of the clinical aspects, particularly of hyperthyroidism in relation to some of the practical problems with which we have had to deal.

In order that you may know that we have had sufficient experience from which to draw deductions, I wish to mention that we have now operated on 13,790 patients with goiter with an operative mortality of 0.68 per cent, and a patient mortality of 0.87 per cent. Of that group, 4,521 have been exophthalmic with an operative mortality of 0.63 per cent, and 407 recurrent hyperthyroidism with a case mortality of 0.74 per cent.

I am extremely anxious that everyone who is dealing with thyroid conditions should appreciate what nearly everyone does, that the mortality rate in toxic adenoma is and always will be, I believe, considerably higher than in the more striking group, that is, exophthalmic goiter. I think this is due to the fact, not that toxic adenoma is any more serious as relates to its degree of hyperthyroidism, but rather because it tends to occur in people of middle age or advanced years, and so with coincident lesions.

I wish to present a group of cases, the management of which settles whether or not these patients will live or die. I have discussed these cases a good many times, but due to the fact that many physicians who are not dealing with acute thyroid states may go through their entire lives without seeing more than a few of these cases,

I am prompted to repeat our experiences with so-called thyroid crises.

I wish you would all try to have the picture of a patient in a severe crisis in mind so that you can compare it with another picture showing the end-result after operation and then I think you will fully realize what hyperthyroidism is. We tend to think of hyperthyroidism in terms of toxicity. I think it is very much better if we think of hyperthyroidism in terms of hypercombustion.

While I cannot prove it, it is my conviction, from having the opportunity to see a good many of these patients in thyroid crises die unoperated, that thyroid deaths very likely are largely liver deaths. There are a number of things which make me believe that the serious conditions arising from severe hyperthyroidism are the result of diminished liver function. For instance, we know that when patients have a severe hyperthyroidism, going on to mortality, they often die jaundiced, even though they have had no surgical operation and no evidences of infection. They often die with excessive elevations of temperature (105 and 106 degrees); likewise, with no infection. We know they are benefited by the things that benefit patients with lowered liver tolerance, such as fluids, glucose, and transfusion. In addition to that, we know that when they do die they have a low glycogen in their liver.

Hyperthyroidism, in extreme states, that is, thyroid crises, is very much like diabetic coma. If we know a patient is going into a diabetic coma and do the right thing, we can keep him out of the coma. If he gets into the coma, he

*Read before the annual meeting of the Minnesota State Medical Association, Minneapolis, June 24, 1935.

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

is difficult to manage. If we know a patient with excessive hyperthyroidism is going into a crisis and we recognize it, we not only can keep him out of the crisis but can operate upon him within three weeks and cure him entirely of his hyperthyroidism, with no danger of his going into a crisis again.

Therefore, it is important to have in mind, in a case of hyperthyroidism, what the signs of an impending crisis are. If you have a patient with a pulse of 120 in hyperthyroidism, and for an unknown reason the pulse progressively rises, that patient is a candidate for a crisis. If you have a patient with a clear mental state, who shows signs of irrationality, that patient is on the verge of a crisis. If you have a patient who has a superimposed infection, that patient is on the verge of a crisis because hyperthyroidism is intensified by infection exactly as diabetes is. Therefore, a patient with moderate to moderately severe hyperthyroidism, who is subjected to an infection, can very well within an extremely short time go into a severe crisis, become unconscious and die. If you have a patient with hyperthyroidism who is vomiting, that patient is on the verge of a crisis, because he has lost his sole method of balancing his metabolism. He has lost his ability to take in fluid and fuel, and so his increased metabolism goes on and he consumes himself because he cannot supply the fluid and fuel to combat his excessive metabolism. This is likewise true of the patient with hyperthyroidism who has diarrhea. In the event any of these conditions exist, a patient with severe hyperthyroidism is on the verge of crisis.

If you do the right thing you can get him out of the crisis, and that is to give him something to burn instead of himself. Give him salt solution, glucose, intravenous iodine, and sedatives. Give him salt solution, but not one thousand cubic centimeters in the morning, at noon, in the afternoon, and at night, because his metabolism is so excessively elevated he will burn that up quickly and there will be an interval in which he is burning himself. Tie a needle into his long saphenous vein, at the instep of his foot. Give him forty to sixty drops per minute of salt solution and five per cent glucose solution. Give it to him constantly day and night so he gets forty to sixty drops every minute. In the majority of cases you will need to give him concentrated glucose in addition. If you

will do this and add, what we have discovered in the past five years you will need to use 500 to 800 grams of glucose in solution, you will get most of these patients out of crisis. Contrary to the usual surgical teaching, which is never to operate on a patient close to crisis, we have always said, "Operate on the patient after you have gotten him out of crisis." If you get this patient out of crisis and send him home, you have only temporarily interrupted his excessive metabolism. He can very well go back into crisis, and the next time you may not be able to get him out. Having gotten him out of the crisis, put him on a high carbohydrate diet for about three weeks and you can do a hemithyroidectomy and promptly check the progress of his disease.

There has been developed within the last two or three years a measure concerning which you will probably begin to hear reports, and that is the so-called impedance angle. I do not wish to spend much time on the impedance angle, except to relate to you what the impedance angle is and our results as far as the accuracy of the impedance angle goes in diagnosing hyperthyroidism, so that you will be able to comprehend what it is all about when it begins to appear in the literature.

It has been known for a long time that when patients have hyperthyroidism they have an increased tissue porosity to an electric current, and when they have hypothyroidism they have a decreased tissue porosity to an electric current. Therefore, one may, if it is possible to measure this, diagnose hyperthyroidism in terms of tissue permeability, and the impedance angle is the relation of the effect of an alternating current in terms of resistance to capacity. It is what is spoken of by electrical engineers as the power factor. It can be determined on a patient by immersing his arms in salt solution, leading them to the apparatus, and by means of a bridge, tuning the resistance to a twenty-thousand alternating current.

I am not a physicist, and I am not capable of discussing this test from the point of view of its technical side. We have, however, with the aid of Professor Harrison, a physicist, now done this test on something over two hundred and fifty cases, and in this small series reported here the error in patients with cases of hyperthyroidism has been 29 per cent, and the error in non-

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

toxic cases has been 15 per cent. I can only say that, in the frank cases of hyperthyroidism that you and I could diagnose clinically, this is accurate. In the borderline cases it is not yet dependable.

Another group of cases in which rather new developments have occurred are those related to exophthalmos. Everyone who is interested in thyroid disease is familiar with the fact that exophthalmos follows two thyroid states, but those who are not particularly interested in following thyroid disease are unaware of the fact that in many cases exophthalmos is not associated with hyperthyroidism but is particularly associated with postoperative hypothyroidism. In fact, one may have a patient with exophthalmic goiter who does not have exophthalmos. That patient may be operated upon, develop postoperative myxedema, and then develop an exophthalmos which is more intractable than the exophthalmos associated with exophthalmic goiter.

The covering of the eye is nourished by osmosis and not by blood vessels. Lid pressure produces wrinkling of the conjunctiva, it produces loss of nutrition which results in slough, and if it is permitted to go on it will result in complete loss of both eyes. Therefore, one should appreciate that every patient with extreme exophthalmos is a candidate for blindness, and if they do have progressive exophthalmos, something should be done about it, and done quite promptly.

If a patient has conjunctival wrinkling, the first thing that should be done is to suture the eyelids together. The edges should be denuded, just as the perineum is denuded, and they should be sutured while something is being done about taking care of the exophthalmos. If this does not relieve the exophthalmos, something must be done to produce regression of the prominent eyes. This is best done by means of an operation described by Howard Naffziger, of San Francisco, consisting of a brain operation, turning down a parietal bone flap, lifting up the frontal lobes and rongeuring away the roof of the bony orbital canal. This gives room for the enlarged ocular muscles to bulge upward and allows the eyes to sink back and thus protects them against lid pressure.

Dr. Horrax, in the Department of Neurosurgery in the Clinic, has operated now on six

patients for this condition, and our conclusion is that it will save the eyes in every case, but it is not a cosmetic operation in terms of completely overcoming exophthalmos.

I am a little self-conscious in presenting this next subject because it has been discussed over the country a great deal, and I have purposely withheld statements regarding the value of total thyroidectomy for cardiac decompensation and angina until we should have had enough personal experience with it.

We have now operated on thirty-five patients, and our follow-up shows that the anginas have done better in terms of end-results than the cardiac failures. Our sum total experience in the thirty-five cases leads us to believe that complete thyroidectomy, total removal of the thyroid, for cardiac decompensation, promises not to be as satisfactory as we had hoped it would be. If you have a patient who has little or no cardiac reserve, you must create an artificial one by lowering his blood velocity and heart metabolism by producing myxedema. If you produce myxedema, you produce an inefficient heart. Therefore, those who have advocated this method have proposed that having produced a complete myxedema, you then feed them thyroid extract and maintain metabolism at minus twenty-five. We feel this is too narrow a lane to maintain over a long period of time, and our experience has been that in the total thyroidectomies for cardiac decompensation most of them have had a return of their decompensation. It is not as satisfactory an operation as is subtotal thyroidectomy in the patient with cardiac insufficiency associated with hyperthyroidism.

When the patient has an intolerable pain with angina pectoris, that patient will willingly accept the vegetative state which is associated with myxedema, and in those cases there have been a definite number who have been relieved of their pain. Still we do not feel entirely convinced that even in angina, total thyroidectomy will give the results we hoped it would. We believe we should not condemn total thyroidectomy but we believe patients should be carefully selected and, in the majority of cases, it will not prove as satisfactory as we hoped it would.

I am interested in presenting to you our experiences with blood cholesterol. Dr. Hurxthal in the Clinic has determined the blood cholesterol on 1,800 patients, and I would like to present

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

the results of his experience. The range of normal blood cholesterol is 120 to 220 milligrams, per 100 c.c. of blood, and the average is 180 milligrams. The usual range is 160 to 200 milligrams.

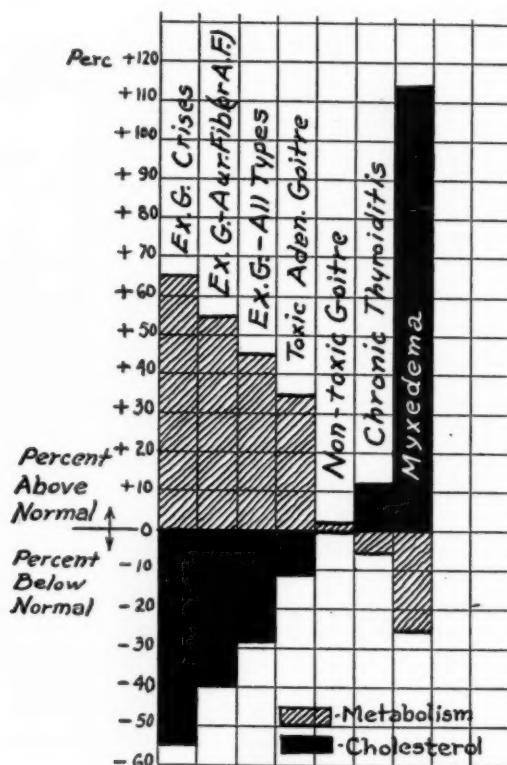


Chart 1. Chart showing relationship between blood cholesterol and metabolic rate in different types of thyroid disease, based on average values.

In the following conditions, blood cholesterol is low: infection, malignancy, emaciation, hyperthyroidism, leukemia, and vegetable diet. It is high in myxedema, nephrosis, some cases of arteriosclerosis and diabetes.

In a series of 283 cases of hyperthyroidism, with an average basal metabolism of forty-five, the average blood cholesterol was 130; highest, 245; lowest, fifty-three. Let us see how it checks with the basal metabolism.

In the patients with hyperthyroidism, the blood cholesterol is low and rises to normal after operation. Blood cholesterol determinations are of less value in hyperthyroidism than in hypothyroidism, because the range is too narrow. From our experience, one can only say that in

general in hyperthyroidism the lower the blood cholesterol, the more serious the operative risk.

On the other hand, when we come to the relation of blood cholesterol to myxedema, here is a more valuable and accurate criterion. Blood cholesterol is a more accurate indicator of myxedema because it is not affected by emotional disturbances.

In thirty cases of true myxedema the average basal metabolism was minus 26.2; average after adequate treatment, minus 1.7; average blood cholesterol before treatment, 355; average after treatment 186.

Chart 1 shows the correlation between blood cholesterol and basal metabolisms in a series of cases.

Of what clinical value is this? It is a method whereby you may determine whether or not basal metabolisms of minus degree represent true drops in term of thyroid secretion. You can determine whether or not that patient will be benefited by thyroid extract. You can, I think, pick up cases of myxedema without the typical clinical features which often would be overlooked without these measures. I think to run a thyroid clinic without cholesterol estimations would be to limit oneself by the loss of one of the most valuable measures, particularly as relates to those patients who have minus degrees of metabolism.

Another interesting group of cases comprise those I have had with Dr. Joslin—exophthalmic goiter associated with diabetes.

TABLE I. PATIENTS WITH TOXIC GOITER ASSOCIATED WITH DIABETES

Secondary Hyperthyroidism

	Old Series	New Series
Number of Cases	28	30
Operated	26	26
Postoperative deaths	7.7%	3.9%
Sex: Male	4	5
Female	24	25
Age at onset of diabetes	47.8 yr.	55
Age at operation	51.5	58

Primary Hyperthyroidism

	Old Series	New Series
Number of Cases	43	33
Operated	37	30
Postoperative deaths	2.7%	0%
Sex: Male	10	9
Female	33	24
Age at onset of diabetes	40.5 yr.	42
Age at operation	43.7	43

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

Notice that in the old series we had a mortality of 2.7 per cent. In the recent series reported last year we had a mortality of zero. I present this table so you will realize that the status of a patient with diabetes and hyperthyroidism is more serious than with either one alone. In order to accomplish this mortality, we have had to double the percentage of cases in which we have done multiple stage operations. We do two or more stage operations in 22 percent of all our toxic cases in order to get the low mortality rate which we reported at the beginning of the talk. In patients with diabetes and hyperthyroidism, we have had to increase the two-stage operations to 50 per cent.

What may we learn from our experience regarding hyperthyroidism and diabetes? Outstandingly one point, and I am very anxious to impress this upon everyone who is dealing with this subject. If you do not approve of the surgical treatment of exophthalmic goiter, you can use rest, radium or anything else you want to so long as diabetes is not also present. Diabetes with hyperthyroidism parallels diabetes with an infection. We have been taught from our experience with diabetes that an infection intensifies the diabetes and the patient is in danger of going into a coma. We have all learned that the diabetic with an infection should be relieved of his infection as soon as possible.

If a diabetic patient has hyperthyroidism, he has an increased demand for insulin, and is intractable from the point of view of dietary management. Submit him to operation early and do the operation in two stages. Treat him as you do any diabetic or hyperthyroid case postoperatively and you will have increased his carbohydrate tolerance, lowered his demand for insulin, and he will be easier to manage from a dietetic point of view.

I wish to present to you what I think is the most interesting and the most striking of all the work which we have done in connection with thyroid disease. For a long time we have been interested in trying to demonstrate circulating thyroxin but we have not been able to demonstrate it and, so far, no one has ever been able to demonstrate it. We have tried all sorts of schemes, but I think the quantitation of blood iodine comes as near demonstrating the amount of circulating thyroxin as anything we have today.

In order that I may present to you our experiences with blood iodine in thyroid disease, I would like to lay the groundwork by going over the function of the thyroid gland as relates to iodine and its capacity to store and to discharge iodine.

Hyperplasia is the typical microscopic picture which one sees in excessive hyperthyroidism. The colloid material in the thyroid acini is undoubtedly the vehicle which carries thyroxin, and when we have exophthalmic goiter the thyroid gland contains very little colloid. It therefore cannot hold additional iodine. Dr. Cattell in the Clinic determined the milligrams of iodine per gram of dried gland in four hundred thyroids removed from patients with exophthalmic goiter. We know that in the patient with exophthalmic goiter there will be as low as 0.3 of a milligram of iodine per gram of dried gland and, at the same time, we have no or little colloid in the acini. That means the iodine has been dumped or leaked out of the thyroid and so probably the thyroxin. Thyroxin is the active principle of the thyroid gland which does everything thyroid extract does, but if you remove its iodine fraction it at once loses its metabolism elevating capacity. When the thyroid gland is relatively free from iodine and free from colloid, the iodine has probably leaked into the blood stream and it is then that one finds a high blood iodine.

The administration of Lugol's solution to a patient with exophthalmic goiter can increase the milligrams of iodine per gram of dried gland from 0.2 of a milligram to 1.5, demonstrating what a tremendous thirst the exophthalmic goiter has for iodine. That is the basis for the fact that patients with toxic goiter are benefited by Lugol's solution, and is the basis of the development of the so-called iodine tolerance test by Mr. Perkin in the Clinic.

The patient with hyperthyroidism probably has his symptoms improved by Lugol's solution because the accumulation of colloid in the acini which follows the administration of iodine presses on the blood vessels, presses on the lymphatics (Marine), diminishing thus the ability of the lymphatics to take up thyroxin, and so temporarily improves these patients. David Marine has suggested that the distention of the thyroid acini with colloid produces pressure on the secreting cells, lessening the acini and thus diminishing their activity and also by pressure dimin-

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

ishes the vascularity of the gland. On the other hand, after the gland has become adjusted to this involution, the blood vessels and lymphatics reopen and the symptoms of hyperthyroidism return. It is because of this that iodine is only of temporary value in the treatment of hyperthyroidism.

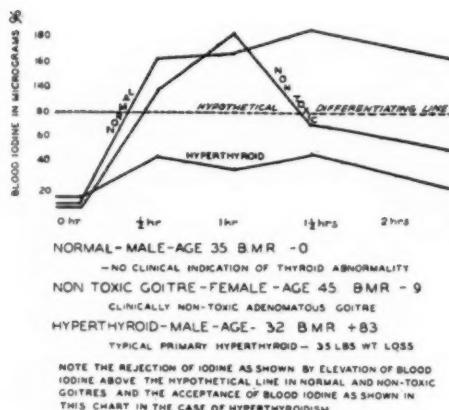


Chart 2. Graphs showing relationship of blood iodine concentration to time in normal, non-toxic goitrous, and hyperthyroid individuals following the oral ingestion of 6 min. of Lugol's solution, 37 mgm. of iodine.

In patients who are normal, who have no thyroid disease, blood iodines have averaged eleven micrograms of iodine per one hundred cubic centimeters.

Patients with non-toxic colloid adenomas have shown normal or below normal blood iodines.

Twenty-two patients with exophthalmic goiter have shown blood iodines ranging from ten up to 138 micrograms, the average being nearly four times normal (ten micrograms) per one hundred cubic centimeters. This is as one would expect it to be. If the gland is low in iodine, then the iodine must be in the blood stream, and in exophthalmic goiter the gland is low in iodine and the blood iodine is high.

It is the above stated facts that form the basis of the iodine tolerance test developed by Mr. Perkin. If we set up eighty or 100 micrograms of iodine as a theoretical base line and then if after twelve hours rest in bed the patient suspected of having hyperthyroidism is given a fixed dose of iodine (thirty-seven micrograms), and the blood iodine is determined every half hour and every hour for several hours, we can demonstrate an iodine tolerance curve. If the

blood iodine curve rises above this theoretical base line of one hundred micrograms, it is evident that the thyroid gland has rejected the iodine because it is not in a state of hyperplasia. If, on the other hand, the blood iodine does not rise to or above this base line, then the iodine has been accepted by the thyroid because it is in a

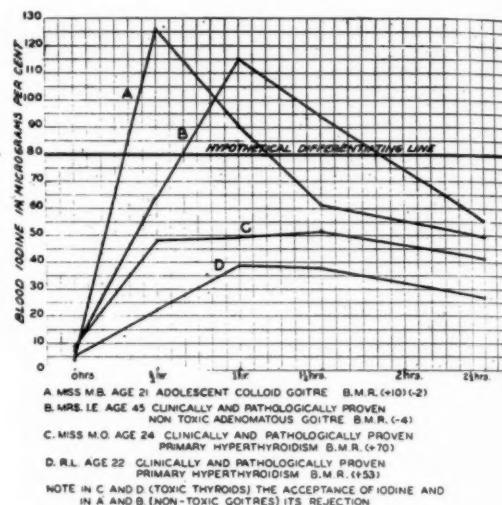


Chart 3. Graphs showing iodine tolerance curve in two cases with normal and two cases with toxic goiter.

hyperplastic state and the probability of hyperthyroidism then becomes more definite.

Chart 2 depicts the curve in three cases, normal, non-toxic, and hyperthyroidism with a base line set at eighty in this case. Note that in the hyperthyroid the iodine is accepted by the hyperplastic gland, and in the non-toxic gland and normal thyroid is rejected, and the curve rising above this theoretical base line.

Chart 3 gives the iodine tolerance curve in two cases with normal and two toxic goiters. These curves represent the general trend in normal and toxic cases. In a patient with a normal thyroid and sufficient iodine, iodine is rejected, and in the case of the hyperplastic thyroid is retained.

Chart 4 shows the trend of blood iodine in twenty-two patients three months and six months after operation. Except in three cases, there has been the accurate drop in blood iodine that parallels the fall in metabolism. Two of these patients had recurrent hyperthyroidism.

HYPERTHYROIDISM AND HYPERPARATHYROIDISM—LAHEY

and one was a patient who had had a good deal of iodine.

I think the blood iodine determination offers the possibility of developing into a method of determining whether or not the thyroid gland will accept iodine, and thus whether or not hyperplasia exists in the thyroid gland. It is,

which was removed from the mediastinum in this woman was the size of a plum.

In one of the cases of hyperparathyroidism occurring in our experience, the tibia and fibula became so decalcified that the longitudinal leg muscles wrinkled the bones. In this case there was the most complete decalcification I have ever seen in any patient.

Where have we found these parathyroid tumors, and where may one expect to find them? If we are going to deal with the disease of hyperparathyroidism, we must be familiar with the areas where parathyroids can be located and so where parathyroid tumors can be found.

In the course of the four hundred thyroids spoken of above which Dr. Cattell reduced to a powder, we learned that parathyroid bodies are often intrathyroid, and in that patient in whom the tibia and fibula were wrinkled two normal parathyroids had been removed in another clinic but no tumor could be found. I told the surgeons that I thought they could find it if they would look in the mediastinum and in the thyroid, because if you do not find a parathyroid tumor in any of the normal locations, you will usually find it in either of these other locations. They looked within the thyroid and found it there.

We have, on surgically removed thyroids, found transplanted and proven by microscopic section one hundred and ninety parathyroids. That has given us an unusual opportunity to demonstrate the location, normal and abnormal, of parathyroids.

We have seen and proven parathyroids to be in the branches of the superior thyroid artery, in close relation to the branch that goes to the isthmus, and in the isthmus itself of the inferior thyroid artery. Here is the common location. We have found them on the trachea, behind the isthmus, out on the main trunk of the inferior thyroid artery, on the front of the thyroid gland, within the thyroid gland and in the superior mediastinum.

Finally, I feel certain all of us are permitting patients with parathyroid tumors to pass through our clinics unrecognized. I think every patient who has lost height, every patient who has developed round back, every patient who has unexplained nerve root pains of the arthritic type, and every patient who has kidney stones should be investigated for a possible parathyroid

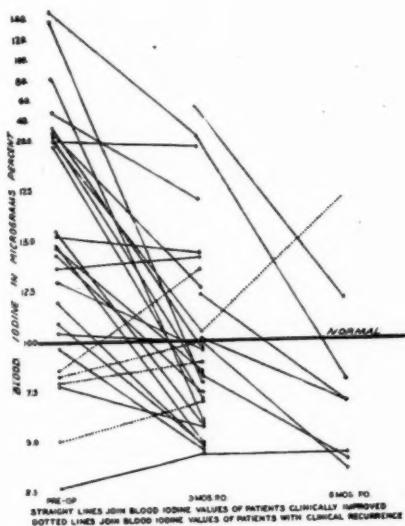


Chart 4. Graphs indicating the trend of blood iodine in twenty-two patients, three months and six months after operation.

frankly, not as yet a proven clinical test. When we have high blood iodines, then we probably have high thyroxin content in the blood, and when we relieve them we probably, by lowering the blood iodine, have diminished the circulating thyroxin.

I would like to present to you briefly our experiences with hyperparathyroidism. One patient, a woman, had a parathyroid adenoma the size of a plum in her mediastinum. Her chest was collapsed, due to the fact that her bones became so demineralized that the musculature of her chest markedly collapsed her chest in all diameters. In addition, she lost two and one-half inches in height because her vertebrae became so decalcified that they collapsed and she acquired the typical round back. In any patient who has a round back, you should do blood calciums and blood phosphorus.

The skull in these cases shows by x-ray the typical fuzzy shadow due to the decalcification which takes place in it. The parathyroid tumor

SIMPLIFIED OBSTETRIC CARE—PLASS

adenoma by having his blood calcium, blood phosphorus and phosphatase determined. If he has a high blood calcium and a high phosphatase, he has a hyperparathyroidism due either to an adenoma of the parathyroids or possibly a hyperplasia of the parathyroids, and no matter how difficult it is, if you will search far enough you

will find this parathyroid adenoma. If you remove it the bones will recalcify. After you remove the parathyroid adenoma, turn the patient over to an orthopedist, who will put him in the best position so that when the bones do recalcify they will do so in the best possible position and not in the worst.

SIMPLIFIED OBSTETRIC CARE*

E. D. PLASS, M.D.

Iowa City, Iowa

WITHIN the past several years, increasing attention has been directed toward those problems which have an important bearing upon maternal welfare. Various statistical studies available to the laity and the profession have emphasized the fact that many maternal deaths are preventable, but few concrete and simple suggestions toward improving obstetric results have been made. Obstetric literature generally has tended to the discussion of rare complications, to the description of new and complicated diagnostic and therapeutic developments, and to the glorification of operative delivery under standardized hospital conditions, to the confusion of the majority of practitioners who must of necessity deliver women in their homes under more or less poor conditions. When it is considered that in the country as a whole 65 per cent of all births are conducted outside of hospitals, and that in less thickly populated areas the figure may be considerably higher, it is apparent that home delivery presents a tremendous field.

During the period since the beginning of the antiseptic era, there has been a gradual development of delivery and post-partum routine care for hospital practice which has proved reasonably efficient, but which has become insidiously more complicated by the accretion of new procedures, until now it can be carried out only in institutions having every modern facility. Little serious effort has been directed at evaluating

the various technics with the idea of retaining the essential and discarding the superfluous, so that there may be developed by exclusion a routine which is effective in either hospital or home and applicable to the latter. During the past twenty years we have engaged in such clinical investigations and have developed a simple and efficient obstetric care.

Pregnancy.—Except for the application of the general principles of prenatal care directed at the detection of early symptoms of somatic disease, there are few instructions which are necessary. Pregnancy is a physiologic process, even though there is a closer than usual approach to the pathologic, and there is little need for marked deviation from the usual standards of reasonable living. Too great emphasis upon the establishment of a new routine serves to set the pregnant woman apart and to aggravate the neurotic tendencies which are present in all of us.

A sensible diet includes a basic intake of milk, fruit and vegetables, valuable particularly for their vitamin and mineral content, with the addition of other energy-producing foods according to individual preference, except that articles of food which produce discomfort should be eliminated. There is no reason for proscribing meats and in fact recent evidence suggests that an adequate protein intake may protect the patient against the development of the toxemia of late pregnancy and may minimize the hydration anemia to which pregnant women are prone. In fact, we have for some time given high protein diets to those toxemic patients who have no evidence of chronic nephritis and to

*From the Department of Obstetrics and Gynecology, State University of Iowa, Iowa City, Iowa. Presented before the Minnesota State Medical Association, Minneapolis, Minnesota, June 25, 1935.

SIMPLIFIED OBSTETRIC CARE—PLASS

those with hypochromic anemia with gratifying results. When protein is ingested in the form of meat, there is no scientific reason for differentiating between the "red" and the "white" meats, including poultry and fish. There should be an adequate fluid intake and it may be wise to restrict somewhat the ingestion of salt, which predisposes to the production of edema.

Provided sufficient of the three essentials of an adequate diet, milk, fruit, and vegetables, are taken, there is no good argument for the inclusion of additional mineral substances, but if there is reason for thinking that the calcium intake is too low, calcium gluconate or dicalcium phosphate may be prescribed. It should be remembered that during the last trimester of pregnancy the demand for calcium is high and equals the amount present in two quarts or more of cow's milk. During the winter, when the quantity of ultraviolet radiation is diminished, an additional supply of vitamin D is advisable. This need may be supplied by cod liver oil, viosterol, or artificial sunlight. There is no danger that this accessory food factor will produce untoward ossification of the fetal cranium and thus lead to dystocia.

In regions of endemic goiter, it is advisable to provide small amounts of iodine during pregnancy. Ordinarily, the habitual use of iodized salt will supply sufficient iodine to protect the maternal and fetal thyroids. The slight danger invoked by such prophylactic therapy is more than balanced by the benefit which may be expected.

Clothing deserves but little consideration since modern women's apparel is very sensible. It is, however, probably wise to advise against constriction of the legs by rolled stockings and circular garters which may increase a predisposition to the development of varicose veins. The wearing of tight brassieres is to be avoided. Corsets are useful only when a pendulous abdomen or relaxed sacro-iliac joints produce discomfort which may be relieved by proper support.

There has been no adequate proof that the less strenuous forms of exercise are harmful, provided that fatigue does not ensue. In fact there is every reason to believe that reasonable activity is good for the mental and physical health of the normal pregnant woman. It im-

proves the general muscular tone and assists in preventing too great a weight gain, in addition to exerting a beneficent psychic effect.

Labor.—Parturition is essentially a surgical problem and must be approached from that angle. Anatomic and physiologic peculiarities, however, render the attack unique and demand unusual precautionary measures. The operative field lies in an area which is subject to gross contamination with the discharges from the body's metabolic apparatus and which in part comprises tissues that cannot be safely treated with the more powerful antiseptics. On the other hand, the vagina is normally protected by its own peculiar bacterial flora which develops an acidity strong enough to kill the usual pyogenic bacteria in from a few hours to three days. It is thus evident that the chief problem which confronts the physician is to do as little harm as possible.

If it be admitted that any invasion of the birth canal carries a certain risk, it becomes clear that the simplest possible routine should be the best. It has been established by controlled experiments that delivery without any perineal preparation is safe, and it should be the aim of a simplified technic to approach this end as closely as is consistent with certain principles. By many years of clinical trial it has been demonstrated that a very simple procedure is adequate. The pubic hairs are clipped with scissors or regulation clippers in order to avoid the discomfort which may ensue after delivery from clotting of the lochia discharges. Shaving has been discontinued because the lathering and subsequent cleansing offer the opportunity for contaminated material to be carried into the birth canal. Moreover, the average nurse or physician cannot shave this area without producing small cuts and abrasions which may become infected. The cut hairs are brushed off with a square of clean gauze but no soap and water are permitted.

Following the clipping, 2 per cent aqueous mercurochrome solution is sprayed from an atomizer over the perineal region, the lower abdomen, and the inner aspects of the thighs. While the antiseptic effect of this solution may be debatable, it has proved to be a conscience-saver and its psychic effect is good. This preparation is repeated before each vaginal examination and again just before delivery. Spraying is

SIMPLIFIED OBSTETRIC CARE—PLASS

more economical than painting and is recommended for that reason.

A similar dry technic is employed during delivery. Dry gauze sponges and towels are used but no antiseptic solutions are available, on the basis of the belief that they offer little, if any, real protection to compensate for the potential danger involved in washing contaminated material into the vagina. The chief risk of infection during labor comes from without, in spite of the theoretical danger of auto-infection, and it is reasonable to reduce these chances to a minimum by eliminating every possibility of such contamination. For this reason, the instillation of mild antiseptics into the vagina during labor has been discarded after a clinical trial. It complicates the procedure and apparently adds nothing to the safety of the patient.

The course of labor is followed by abdominal and rectal examinations, because they are simple and generally accurate. Vaginal examinations under sterile precautions are made whenever satisfactory information cannot be obtained by the other procedures, but are not used routinely because they are time-consuming if properly performed. Relatively little experience soon brings considerable precision through rectal touch and there is no good evidence to show that this form of examination carries any risk to the patient. Sterile precautions are not necessary provided the thumb is kept away from the introitus.

Enemas are not given routinely, but are employed whenever rectal examination shows that the lower bowel contains fecal material. If the patient cannot empty the bladder, catheterization is effected using a rubber catheter. Every attention is given to seeing that the parturient ingests sufficient fluid and easily digestible nourishment.

Analgesics for use in labor are so numerous that it is impossible to discuss their reputed relative merits. It is, however, more satisfactory for the practitioner to select some drug or combination of drugs which has been adequately tested and to learn through experience how to use it than it is for him to attempt to follow the changing trend and never to become familiar enough with any agent to be confident in its employment. Personal preference due to its use over twenty years is for morphine and scopolamine, but many other drugs are valuable.

The problem of anesthesia for home delivery is equally difficult, with chloroform and ether competing for honors. The former is still, for the short anesthesia necessary in spontaneous labor, generally preferred in spite of the obvious objections to its use. Among the newer methods of anesthesia, it would seem that only infiltration and block anesthesia with novocaine or some similar drug has any reasonable place outside of hospital practice.

Spontaneous labor is safest generally and should be encouraged, interference being employed only for definite and strict indications. The modern furor for "convenience" forceps and version and for ill-advised cesarean section receives no support from the critical analyses which have been made. In a state which has a nation-wide reputation for conservative obstetrics, this need not be stressed. Operative delivery increases the risk of maternal morbidity and mortality, and raises the stillbirth and neonatal death rates.

Pituitary extract—and that includes those products which in addition presumably contain an extract of the thymus gland—have no place in the conduct of labor until after the child has been born. It should be remembered that precipitate delivery is worse for the mother and child than is a normally slow birth. On the maternal side, excluding the remote possibility of rupture of the uterus, rapid expulsive pains not only predispose to deep visible lacerations but also to invisible tearing of the uterine and vaginal fascial supports and to later prolapse of the pelvic viscera. Rapid birth is worse than slow birth for the child. Sudden molding of the head as it comes rapidly through the birth canal increases the risk of intracranial hemorrhage, which is responsible for at least 50 per cent of all stillbirths and early infant deaths. Many such catastrophes can be attributed to the unwarranted use of oxytocic agents. These drugs undoubtedly have a place in the induction of labor and in the post-partum period but not during the process of parturition. There is some doubt as to whether their use is justified during the third stage of labor, because of their apparent tendency to produce abnormal uterine contractions and to increase the danger of placental retention. At any rate our clinical experience indicates that the third stage use of

SIMPLIFIED OBSTETRIC CARE—PLASS

pituitary extract does not consistently hasten placental expulsion or reduce bleeding.

The Puerperium.—Immediately after delivery, the puerperal woman requires constant attention for at least one hour to guard against excessive bleeding from uterine atony. It is not necessary that constant massage be instituted but the size of the uterus should be repeatedly determined by abdominal palpation and any enlargement should be met with vigorous massage until the contained clots are expelled. This maneuver may also reduce the likelihood of annoying after-pains. Generally speaking, the administration of pituitary extract or ergot preparations is not required, although such a practice leads to increased peace of mind if the patient must be left. It has not yet been decided whether the common hospital practice of applying an ice cap to the lower abdomen for some hours after delivery has any effect on uterine tone. It may be that after-pains are slightly more common but no other disadvantage can be traced to its omission.

When the delivery procedure is thus completed, the patient particularly demands rest, and during the first twenty-four hours every effort should be made to see that she is undisturbed. Beyond this point inactivity is not essential, but rather the woman is encouraged to change her position frequently and to move around in bed, although ordinarily it is undoubtedly better for her to remain in bed for a week or ten days. After the second or third day, systematic exercises are begun and continued until convalescence is well along. These exercises should be directed especially at the abdominal muscles and may include deep breathing, raising the legs, and elevating the head and shoulders. Each day should see the addition of some new feature to make the procedure cumulative. At the end of a week, the knee-chest position is assumed for increasing periods each day until it can be maintained for fifteen to twenty minutes twice daily. This maneuver may have some effect upon the position of the uterus, but is prescribed not for this reason but because it mechanically alters pelvic circulation, prevents congestion and improves blood vessel tone. Such a program of puerperal exercises not only puts the patient in better condition when she leaves the bed but apparently reduces the incidence of "milkleg" or femoral thrombophlebitis, which is one of the more annoying sequelæ of mild uterine infections.

By custom, the puerperal woman has long been treated as if she were ill and has for some days been given a restricted diet, even though common sense demands that she be well fed. For years, every puerperal woman, unless suffering from some disease which demands dietary restriction, has been given a full diet from the time of delivery, together with supplementary feedings between meals. No harm has ensued and it is believed that such a program hastens the recovery of strength. From what little is known concerning the relation of dietary factors to lactation it seems logical to give a diet relatively high in protein and in vitamin B. For this reason the use of leafy vegetables and milk is encouraged. Yeast may be employed to augment the vitamin intake.

The older idea that the puerperal woman should have a drastic cathartic during the day after delivery has been abandoned as unwise. In the presence of a perineal repair especially, such a procedure violates two surgical principles: violent fecal evacuations inevitably disturb the wounded area and subject it to the danger of infection with bowel contents. It is far better to wait approximately three days before evacuating the bowel with a simple enema or cathartic. Subsequent regular bowel movements may usually be secured through the twice-a-day administration of moderate doses of plain mineral oil, which carries the theoretical risk of absorption and elimination of the fat-soluble vitamins A and D, but which is undoubtedly preferable to the continued use of any other cathartic agent. In rare instances, diarrhea appears in the nursing child while the mother is taking mineral oil and is relieved when it is discontinued. This action must be indirect since the oil is probably not absorbed and certainly could not be secreted in the milk. In spite of the common belief that constipation produces fever, no good evidence has been offered in support. The fact that the temperature may subside after a cathartic has been given does not constitute acceptable proof, for such a situation may be balanced by the observation that a patient with a repaired complete tear may go without a stool for a week or longer without a temperature elevation. In fact, normal puerperal women have purposely been constipated for several days without any effect other than the loss of nervous equilibrium encouraged

SIMPLIFIED OBSTETRIC CARE—PLASS

by newspaper and radio insistence upon the evil results of autointoxication.

As a hold-over from the days when antisepsis was to save the human race, the usual routine care of the post-partum perineum wastes a great deal of the nurse's time, disturbs the patient and does more harm than good. The perineum, especially when it has been repaired, is a healing area which above all demands rest. The usual procedure of douching, wiping, and mopping violates this principle. Better results are obtained if the area is kept reasonably clean by washing once or twice a day with soap, water, and washcloth, without the exhibition of any antiseptics. There is less trauma, less pulling on exposed sutures, and better conditions for healing. Within three days after delivery the patient ordinarily takes her own bath, as a part of her daily exercise, and also cleanses the vulval region. The more extensive the laceration and repair, the more effective this "let-alone care" is. It is also completely applicable to secondary repairs and other plastic vulval or vaginal operations.

Another abomination is the vulval pad which is still commonly employed to collect the lochial discharge, in spite of the fact that it has everything to condemn and nothing to commend it. It inevitably pulls exposed sutures, exposes the lacerated area to possible contamination through the fact that it changes position as the patient moves around in bed, and retains possibly infected material in contact with the wound. A saner and more satisfactory procedure consists in placing an absorbent pad under the patient's buttocks and to replace it when soiled. Such pads are easily made from cotton with a newspaper back and are inexpensive. Later when the patient is out of bed, the usual T-binder and vulval pads are employed, but by this time the wound has healed and no harm is done.

The general practice of applying boric acid solutions to the nipples before nursing constitutes an unwarranted waste of time. The time of application is so short that the weak antiseptic employed can do no good. For years this procedure has been eliminated without any increase in mastitis, the only complication it might prevent. For protection, the nipples may be covered with a square of gauze held in place by strips of adhesive or a breast binder. No other attention is given unless an abnormality appears.

Overdistended breasts are treated by support and analgesics, but rarely by pumping, since removing the milk merely stimulates the secretion of more. Mammary gland distention does not produce fever in itself. When an elevated temperature appears as the mammary glands begin to function, every attempt should be made to explain it on some other basis—milk fever is not an entity.

Cracked nipples particularly demand rest. The baby should be fed from the bottle for at least forty-eight hours while distention of the breasts is relieved by occasional pumping. The milk thus obtained can be supplemented by formula to provide sufficient nourishment. The application of irradiated vaseline is perhaps more effective than the more commonly employed castor oil and bismuth paste. Heat and light as supplied by a near-by electric bulb apparently hasten the healing. In more stubborn cases, recourse may be had to silver nitrate solution or stick, but this is rarely necessary. When nursing is resumed, a nipple shield reduces trauma to the recently healed area.

To dry up the breasts, when that is advisable for any reason, the simplest and quickest procedure is to stop nursing abruptly, bind the breasts tightly to the chest wall with muslin bandages, and provide analgesics for the relief of pain. Ice caps may be applied but are of doubtful value. Clinical tests have indicated that the period of discomfort is not lessened by inducing watery stools through the repeated administration of saline cathartics nor by reducing the fluid intake. Pumping, stripping, and massaging the breasts only prolong the process and are not advisable.

Mastitis rarely occurs during the first week after delivery, but may then appear at any time during the lactation period. Its advent may be accompanied by constitutional symptoms—fever, chills, and malaise—out of proportion to the palpable lesion. There is usually a tender mass with redness of the overlying skin. Support and the constant application of ice caps constitute the accepted treatment. Unless the temperature falls to normal within forty-eight hours, it is probable that suppuration has occurred. Another significant sign of breast abscess is demonstrable edema of the overlying skin. When pus is present, it should be evacuated according to recognized surgical principles under general an-

thesia, which permits digital exploration of all the abscess pockets.

No attempt has been made to cover all phases of obstetric care, but attention has been given to those procedures which have been developed to replace needlessly complicated and time consuming techniques. Every suggestion offered has been submitted to careful clinical study and has proven

at least as effective as the time-honored procedure which it displaced. The net result has been that nurses have been relieved from practically all special nursing routine and can spend more time upon those duties which have actual constructive value. Moreover, the recommended techniques can, with minor variations, be utilized in home delivery practice.

THE PRESENT STATUS OF CLINICAL ALLERGY*

H. L. ALEXANDER, M.D.

St. Louis, Missouri

THE title of this communication permits a good deal of latitude, and I have taken the liberty to assume that this audience is composed of those not thoroughly versed in the subject. If, then, I reduce what I have to say to rather simple terms, some of which may already be known to you, my purpose will be understood. In presenting this subject, I shall treat of it first in general terms, and then with the specific manifestations of allergy, as asthma, hay fever, etc., and interpret the more recent contributions about them.

The present status of clinical allergy will be appreciated more if it be related to its early status and something said of the history and the phenomenal development of the subject during the past twenty years. Clinical allergy grew out of the conception of anaphylaxis. In the early years of this century it was discovered, really rediscovered, that if a protein substance foreign to the body, such as horse serum or egg white, were injected into certain animals, no symptoms developed. If after some two weeks this process were repeated, sudden violent and fatal manifestations often occurred. The early application of this phenomenon of anaphylaxis or protein sensitization to man dealt with the occasional cases of violent illness and death that occurred after the use of antitoxins. Such symptoms had heretofore been explained by the assumption of some toxic substance in the horse serum. Among the immediate symptoms of protein shock are asthmatic breathing, sneezing, and urticaria. Moreover, in guinea pigs, after the

second or shocking dose, the animal sneezes and then develops bronchospasm which causes great ballooning of the lungs. These manifestations led to the suggestion that bronchial asthma, urticaria, and sneezing attacks as in hay fever and vasomotor rhinitis, may all be due to protein sensitization. Until this time it had been recognized that these clinical conditions occurred together occasionally in a given individual, but each had been considered a separate disease. Other than hay fever, the etiology of each was unknown.

The conception that these were not separate diseases but merely different manifestations of one underlying condition, protein sensitization or anaphylaxis, was developed and between the years 1911 and 1915 proven to be true by various investigators both in England and in this country. The proof lay in the fact that if the proper protein substance were rubbed into a scratch in the skin, a generalized sensitization could be shown by an immediate red, itching swelling at that spot. Not only, then, was the new clinical idea expounded that asthma, hay fever, vasomotor rhinitis, urticaria, eczema, and unexplained gastro-intestinal disturbances, for which treatment had been very unsuccessful, were all due to protein sensitization, but, by means of the skin test, the particular offending protein could be discovered, eliminated, and the patient cured.

This advanced idea seized clinical imagination, but the performance of the skin tests required skill as well as patience, and many testing materials, so specialists in the field developed. It was found that sensitization in man was immunologically different than that of anaphylactic

*From the Department of Internal Medicine, Washington University School of Medicine and Barnes Hospital, St. Louis, Mo. Read before the annual meeting of the Minnesota State Medical Association, Minneapolis, June 24, 1935.

CLINICAL ALLERGY—ALEXANDER

animals, therefore the word "allergy," a term already in use to denote the sensitivity of a tuberculous individual to tuberculin, was used in a broader sense to include those with protein sensitiveness. By 1922 and 1923 enough specialists had developed to form two national societies for the study of this new allergy. By 1929, the publications on the subject were so numerous that a *Journal of Allergy* was founded, and this year another *Journal of Allergy* has appeared in Italy. Meanwhile, assembled statistics indicate that an appreciable percentage of the population—10 to 15 per cent at least (some say much more)—suffer some allergic disturbance. This means somewhere from 13 to 20 million people. Of these a fair proportion, at least many with asthma and hay fever, are candidates for medical attention. Such circumstances, namely a new clinical entity with dramatic manifestations, the promise of relief, and an enormous potential clientele, have attracted many hundreds of doctors to specialize in it wholly or in part and always with enthusiasm. Allergic aspects of dermatology, otolaryngology, gastro-enterology, and recently gynecology, urology and cardiology, have their exponents, and no wonder the ordinary doctor is left bewildered as this ever-broadening vista rapidly unfolds before him.

An explanation of clinical allergy may be based upon a few underlying principles which will be here stated, although doubtless much of this is already known to you. In the first place, allergy is inherited, which accounts for the frequent family history of asthma, hay fever, et cetera, in the forebears or collaterals of allergic subjects. A child born of allergic parents inherits something that normal children do not have; and that is the ability or capacity to become sensitive to some foreign protein substance after sufficient contact with that substance. Normal children drink cow's milk with benefit. An allergic child may develop a sensitivity to milk protein, so that he can no longer tolerate it. All through the first half of his life he may suffer from this aversion to one protein or another. When he does, the sensitive cells of his body which come in contact with the particular offending protein develop a toxic substance akin to histamine. This, in turn, causes a sudden, explosive reaction in the form of an intense edema. That is what the skin test is, a sudden edema at

TABLE I. POSITIVE SKIN REACTIONS IN 11,443 CASES OF ALLERGY

Allergic Manifestation	No Observers	No. Cases	No. Positive Reactions	Per Cent Positive Reactions
Hay fever	9	4,381	4,076	93.2
Vasomotor rhinitis	8	1,020	568	55.7
Eczema (infant and adult)	10	775	408	52.7
Bronchial asthma	13	4,809	2,536	52.7
Gastro-intestinal allergy	4	460	122	26.5

the spot where the protein comes in contact with the sensitive skin tissue. If smooth muscle is present, as in the lung and bowel, a contraction or spasm occurs and asthma or colic results. Finally, an allergic individual is not sensitive all over, but only in spots; and these spots are located particularly on the skin, in the respiratory tract and in the gastro-intestinal tract. Hence the manifestations of allergy are eczema, urticaria, asthma, vasomotor rhinitis, hay fever, and gastro-intestinal symptoms, all of which are due to edema and smooth muscle spasm. Other tissues are probably involved, as the meninges (allergic migraine), and possibly other viscera. These "shock organs," moreover, are not all sensitive at the same time. One child may eat wheat and have asthma. For the wheat or its digestive derivative to reach the bronchi, it must get into the blood stream. Here it comes in contact with all the body cells, but finds only those of the bronchi sensitive. Another child eats wheat and has only eczema, since the skin cells alone are sensitive, and so on.

This localized sensitivity has a very important bearing on an understanding of skin reactions. There is much dispute among allergists today concerning the evaluation and interpretation of the skin test, let alone the technic of its performance. The valuable information that a correctly interpreted test imparts has led to its widespread use. Unfortunately, this has resulted in one of two things: either the test has been discarded as too unreliable, or it is retained and interpreted literally so that every positive reaction or questionable reaction is considered signifi-

CLINICAL ALLERGY—ALEXANDER

TABLE II. INCIDENCE OF REACTIONS WITH COMMON INHALANT ALLERGENS (32,182 TESTS)

Allergen	No. Tests Done	No. Positive Reactions	Per Cent Positive Reactions
Feathers *Ch. G. D.	5,491	1,130	20.3
Orris Root	2,537	429	16.9
Horse Dander	2,798	463	16.6
Wool	602	68	11.3
Pyrethrum	1,153	108	9.3
Cat Dander	1,667	154	9.2
Cattle Dander	745	65	8.7
Dog Dander	365	19	8.3
All others less than 5 per cent.			

*Ch. = Chicken, G. = Goose, D. = Duck.

cant. As a result, since multiple skin reactions are frequent, there may be dietary and environmental restrictions to the point of nutritional detriment and a life so sheltered from lurking allergens that the cure becomes worse than the disease.

Statistics concerning the percentage of positive skin reactions in various allergic disorders vary with personal experiences. A list compiled a few years ago is given in Table I.

The test appears to be very reliable in hay fever, positive in about 50 per cent of patients with vasomotor rhinitis, eczema and asthma, occasionally so in gastro-intestinal allergy, whereas in urticaria it is rarely positive. Since a positive reaction results from contact between the allergen applied to the skin and the reacting sensitive cells, then a negative test implies that no antibody is present to react with the allergen, which is in keeping with the fact that the body is sensitized only locally. In any given case the skin may or may not be sensitive. If not, then no amount of testing will bring out a positive reaction. Were this all, then at least the test would offer a partial certainty. Unfortunately, when reactions are positive there are many conditions to their interpretation. First is their variability. They may be positive at one time and negative at another, and although this is not the rule it is something to keep in mind. The degree of reaction varies at different sites of the body. When it is large on the back and abdomen, it is smaller on the arm and often negative on the leg. Finally, and this is discouraging, positive

TABLE III. INCIDENCE OF REACTIONS WITH COMMON FOOD ALLERGENS (32,182 TESTS)

Allergen	No. Tests Done	No. Positive Reactions	Per Cent Positive Reactions
Wheat	1,999	447	22.4
Egg	923	170	18.4
Milk	1,176	171	14.8
Chocolate	285	40	13.9
Spinach	330	44	13.3
Bean	822	126	12.9
Potato	604	73	12.1
Tomato	522	62	11.9
Carrot	329	39	11.8
Pea	548	63	11.5
Barley	644	69	10.7
Rye	946	84	8.9
Pork	508	42	8.3
Beef	527	42	7.7
Oat	1,711	115	6.7
Corn	1,774	117	5.7
Rice	635	36	5.7
All others less than 5 per cent.			

All others less than 5 per cent.

reactions occur that have no meaning whatever. In view of these facts, positive skin reactions other than in hay fever must be regarded with caution, and negative reactions as by no means ruling out the allergens employed.

Fortunately, other than pollens, there are comparatively few allergens that cause most symptoms. By and large, they are the ones with which contact is most frequent, and are listed in Tables II and III.

If one eliminates these he will remove the principal source of symptoms in the majority of allergic patients other than those with hay fever. The treatment of allergy, no matter what the skin reaction is, after all, one of environmental control including diet elimination, with hyposensitization when removal is not possible. Although the consideration of the above list of allergens alone must be looked upon as a short cut, the fact that many cases can be thereby controlled by the non-specialist brings the preliminary treatment of such patients into the hands of practitioners, and offers them a logical approach. Should this not prove successful, the specialist should be called in.

Time will permit only a few remarks concerning specific allergic disorders:

Asthma.—In the past, many asthmas (renal, bronchial, thymic, cardiac, nervous) have been considered separately. It is now recognized that the great preponderance of patients with asthma

CLINICAL ALLERGY—ALEXANDER

are allergic. Of diagnostic significance is the finding of eosinophiles in a mucoid sputum. In no other condition does this combination occur. The finding of pus also merely indicates a super-added bronchitis.

Many cases of asthma are due to the inhalation of dust emanating from bedding. Such particulate matter contributes to the sweepings of a room, and many patients give positive skin reactions to extracts of sweepings—a composite allergen known as "house dust." Until very recently the composition of the reactive substance in house dust was undetermined. Cohen¹ found that feathers, cotton and other organic material in bedding when exposed to the air gradually changed, perhaps decomposed, and became allergenic. This new discovery has a very practical bearing in that a change of pillow or mattress may be of but temporary benefit, so that the safe thing is to completely cover the bedding with some impervious material as rubberized sheeting, which can now be secured on the market as envelopes to encase standard sized mattresses and pillows.

New asthma remedies are constantly being advertised, but none have superseded epinephrin, ephedrin and iodides. Rowe,³ however, has recently reported the use of a strong adrenalin hydrochloride solution, 1 to 100, sprayed through a vaporizer against the back of the pharynx and thus inhaled. This seems to be as effective as hypodermic injection and far more convenient.

Death from asthma is no longer the rare phenomenon of ten years ago. When sudden, autopsy almost always reveals a plugging of large areas of bronchi and bronchioles with tough mucus. Curiously, in many such cases the onset occurs nearer middle life rather than characteristically in the earlier decades. The duration may be but a year or two, with constant, progressive, intractable symptoms, in contrast to the chronic asthmatic with paroxysms dating from childhood. The etiology of this pernicious asthma of middle age is quite unknown.

Finally, there is coming to be a greater appreciation of the fact that much of the dyspnea of asthmatic individuals is due to underlying emphysema. All allergy is functional in that the edema and smooth muscle spasm are transient and when they disappear there is a restitution of normal tissue. In asthma alone there is frequent permanent structural damage and the lung

tissue becomes gradually stretched and loses its elasticity. Emphysema is an inevitable consequence of prolonged asthma, and when advanced, no matter whether the paroxysms are controlled, the individual is crippled by the handicap which emphysema imposes upon respiration.

Hay Fever.—In the past few years, methods have been devised for the identification as well as the enumeration of the pollen granules present in the air. Almost the entire country has been surveyed, so that information is at hand concerning the concentration of hay-fever producing pollens in various localities. Such daily information is very useful in correlating the amount of pollen contact with the patient's symptoms. Severe hay fever with but few pollens in the air at once leads to the suspicion of extrinsic factors. Moreover, such established surveys are of use in planning summer vacations and places of residence.

There seems to be little doubt that hay-fever symptoms may be aggravated by extra pollen factors. This is sometimes spoken of as "added effects." For instance, a patient may be slightly sensitive to corn or milk, scarcely enough to cause symptoms. If these are ingested during the pollen season, they may greatly exaggerate the hay fever. For that reason, many allergists test all patients with hay fever to foods or otherwise examine and control the diet.

Various dust-catching devices have been designed for the purpose of excluding pollens from rooms. Recently the use of air-conditioning with or without filters has been highly recommended. As yet none of this apparatus has proven more than partially effective, although Cripe² has just reported the use of electrostatic plates, a principle use for mine dust, and from his figures this method far surpasses anything as yet reported.

Concerning the merits of the various forms of treatment by injection, such good results are claimed for each that it is difficult to evaluate them. A survey designed for this purpose revealed no definite answer. As a matter of convenience, the perennial method of treatment, wherein an individual once hyposensitized is kept so by the repetition of an injection of concentrated extract every two or three weeks throughout the year, has its merits. Certainly, having patients' skin tested before treatment is begun to determine the strength of extracts to be used is

CLINICAL ALLERGY—ALEXANDER

quite superior to any constant dose stated on the drug-store package.

Vasomotor Rhinitis.—It is of interest that although the nasal symptoms of hay fever and of vasomotor rhinitis (perennial hay fever) are identical, there is such a wide discrepancy of positive skin reactions between the two conditions. It is coming to be more recognized that although inhalant allergens are usually responsible for the condition, the food factor is coming into more prominence. The conventional treatment is environmental control and trial diets, and occasional hyposensitization. There is, however, a group of cases, perhaps 20 per cent, wherein anti-allergic measures are entirely unsuccessful. These have been attributed to endocrine and metabolic disturbances, but their etiology is unknown.

The presence of eosinophiles in the nasal secretion has lately been accepted as a diagnostic criterion of allergic rhinitis. Although there is some debate concerning the accuracy of this test, it remains by far the best.

At the present time, ionization of the nasal mucosa is a popular form of treatment for nasal allergy. A recent consideration of the subject revealed that although temporary relief occurs for a short time after treatment in almost all cases, the procedure has little value in hay-fever or vasomotor rhinitis with marked skin tests and reagins (sensitizing bodies) in the blood. In the latter condition where no reagins are present, and these cases would include the above 20 per cent without known etiology, treatment by ionization may have a distinct place.

Gastro-intestinal Allergy.—It is here that one becomes mired more than anywhere. To begin with, the distinction between "food allergy" and "gastro-intestinal allergy" must be made. The former, a bad term, refers to any allergic lesion caused by food ingestion, the latter to symptoms in the alimentary canal. Concerning these, most of the functional digestive disorders and some organic ones have been considered allergic, although the proof of this is usually empiric in that improvement occurs on a proper diet. A wide discrepancy of opinion concerning these cases exists between the allergist and the gastro-enterologist. The latter recognizes allergic factors as a cause of symptoms, but only occasionally. Doubtless his expert judgment is of more value in the interpretation of gastro-intestinal

symptoms than is that of the allergist. Each recognizes that such symptoms as colic, mucous colitis, vomiting in childhood, and sudden diarrhea, may be caused by food sensitiveness. Of particular interest are the cases of so-called pseudo-cholecystitis, wherein the symptoms of biliary colic are duplicated. Before cholecystography, many mistaken diagnoses were recorded.

Desensitization by peptone advocated by French observers, or by Urbach's propetan, taken before meals, a method recently written about extensively, has found little favor in this country.

Elimination diets are of much value, although many are more elaborate than need be.

A true evaluation of gastro-intestinal allergy remains to be made.

Allergic Dermatitis.—This term is confined to the characteristic superficial eczematous lesions. Recently three forms have been identified:

1. Allergic eczema occurring in the folds of the arms and legs, typical eczema. This is due to the same type of allergen, usually foods that cause allergic lesions elsewhere.

2. Contact dermatitis is distributed at points of contact with clothing or with external irritants, such as the hands (soap), eyebrows (mascara), scalp (hair dyes), neck (furs), etc. The underlying mechanism in this type of sensitivity is different than in other allergic lesions and the reaction is entirely superficial. Many of the offending factors are fat soluble, and are prepared in oily solutions for the so-called "patch test." Here the suspected substance is applied to the skin underneath a patch of adhesive plaster. In twenty-four to forty-eight hours a typical dermatitis appears beneath the allergen in question.

3. A dermatitis similar to the above may appear in patches anywhere on the skin as a manifestation of fungus sensitization. The fungus need not be in the presenting lesion. Cases of athlete's foot with trichophytes in the skin between the toes may sensitize the skin elsewhere. Here intradermal tests with extracts of fungi, notably trichophytin and oidiomycin, when markedly positive, reveal the cause of the dermatitis, and treatment by intradermal injections is often successful.

There are other forms of allergic skin disorders, notably urticaria and allergic purpura. Many cases of urticaria doubtless are not allergic in the strict meaning of the word. Certain-

CONTINUOUS INTRAVENOUS INFUSION—ORR

ly no allergic factor can be made out. Some of these cases are doubtless due to unusual reactions to physical agents as heat, cold, light, and stroking the skin, a conception developed by Duke. In such cases "desensitization" by increasing exposure to the offending agent is dramatically successful.

This sketch of a few recent considerations of clinical allergy is far from complete both as to substance and to the disorders which may be allergic in origin. With the exception of some types of migraine, however, it includes most conditions where allergy has been established. Many of the newer claims remain either to be proven or to have experience accumulated behind them. That some of these are truly allergic is beyond question, but for him who is not an expert in the field, a safer position to assume is one wherein attention is attracted to that which is known.

One word in closing concerning the future of allergy. What I have said this afternoon refers to but one phase of allergy. Serum sickness and

serum shock are others. By far the largest application is sensitiveness to bacteria. Symptoms of tuberculosis, rheumatic fever, scarlet fever, and other infectious diseases are due not alone to the invasion of bacteria in the organs involved but to sensitization of tissues to bacterial products. The nephritis following streptococcus infection of the throat, the arthritis that follows foci of infection elsewhere, are examples of this. The immunologic mechanism is different from other forms of allergy, but all are manifestations of hypersensitivity. The study of bacterial allergy has scarcely begun, and we are on the threshold of a new phase which has implications much wider than those discussed today. This is the allergy of tomorrow.

References

1. Cohen, M.: Paper presented before joint meeting of the Society for the Study of Asthma and Allied Conditions and the Association for the Study of Allergy, Atlantic City, N. J., June 10 and 11, 1935.
2. Cripe, L.: Quoted by Cohen.
3. Graeser, J. B., and Rowe, A.: Inhalation of epinephrine for relief of asthmatic symptoms. *Jour. Allergy*, 6:415, 1935.

CONTINUOUS INTRAVENOUS INFUSION*

A Consideration of Its Possible Dangers

THOMAS G. ORR, M.D.

Kansas City, Kansas

NATURE never intended that the human being be fed and watered by vein, and, therefore, the insult of such a procedure should be respected. This statement is offered as a fair attitude to assume toward intravenous therapy in general, since it appears quite evident from personal observation and a perusal of the literature that little thought is given to the possible dangers of this popular method of therapy. This caution, however, is not to be interpreted as a destructive criticism, or with any thought in mind that such a valuable means of therapy should be discontinued. To assume such an attitude toward a well established method of treatment would be just as illogical as to say that

operations should be discontinued because of their ever inherent dangers.

Clinical observations and experimental work of M. J. Rumold^{1,2} on thrombosis and embolism in the University of Kansas Surgical Clinic have impressed upon us the necessity of more careful methods of administering liquids by vein. The chief dangers we have encountered have been: (1) Reactions with chills and fever; (2) the overburdening of the circulating system by a rapid increase in blood volume; (3) production of general edema and edema of the lungs; (4) kidney irritation with blood in the urine; and (5) thrombosis at the site of intravenous injection with embolism.

In recent years very few immediate reactions have resulted from intravenous therapy in our clinic. All solutions used are freshly prepared

*From the Department of Surgery, University of Kansas School of Medicine. Read at the 82nd annual meeting of the Minnesota State Medical Association, Minneapolis, June 26, 1935.

CONTINUOUS INTRAVENOUS INFUSION—ORR

daily under the supervision of a bio-chemist and carefully handled by trained technicians. Proper preparation of solutions and apparatus, and the more modern tendency to give infusions slowly, have reduced this danger until it is almost negligible. It is recognized, however, that the now universal use of intravenous solutions makes it mandatory that the danger of post-infusion reactions be emphasized.

The overburdening of a weakened circulatory system by a too rapid increase in the blood volume is a danger not to be considered lightly. It seems apparent that not infrequently intravenous solutions are given without due consideration of the pathologic changes that may exist in the heart and blood vessels. Clark⁴ has called attention to acute cardiac dilation as a result of intravenous injection. He reports three deaths and mentions a fourth which he believes were cardiac deaths secondary to dextrose and sodium chloride solutions given intravenously. In my own experience, one death has occurred which seemed to be attributable to an excessive quantity of liquid given by vein to an anemic patient with damaged heart muscle. When considering intravenous therapy for an ill patient we must not be misled by the now well known fact that normal experimental animals will tolerate massive doses of dextrose and sodium chloride solution in the strengths used clinically without apparent harmful effects. This fact has been clearly proven by Warthin,¹⁵ who has injected dogs with as much as twenty times the quantity of solution given the human subject without evidence of circulatory embarrassment. In order to produce pulmonary edema in a dog it was necessary to inject the equivalent of twenty-five liters of fluid for a human being in thirty-five minutes. While these experiments on healthy dogs may be evidence that the normal human individual would tolerate without injury large quantities of liquid given by vein, Warthin very properly warns that the results of his experiments should not be interpreted as justifying the injection of larger quantities of fluid than are given at the present time.

The development of edema during the administration of intravenous infusions is not an uncommon observation. The edema appears first about the feet and ankles and in the flanks. In one of my own patients, a too ardent forcing

of liquids while treating a lower abdominal peritonitis resulted in a general anasarca. Coincidentally pus and red blood cells appeared in the urine. The edema and evidence of kidney irritation promptly disappeared by reducing the liquid intake.

The relationship between kidney irritation and excessive quantities of dextrose and salt given by vein is difficult to estimate in patients with acute infections. The following two cases observed in the University of Kansas Hospital indicate that continuous infusions may have been causative in the production of acute nephritis. The first patient was a young man, aged 19, who had a diffuse peritonitis following a ruptured appendix. He received continuous infusion of 5 per cent dextrose for a period of ten days when gross blood appeared in the urine. At the same time he had marked edema of the feet, legs and lumbar region. The blood in the urine and edema disappeared soon after the intravenous therapy was discontinued. The second patient was a female child, aged 6, who also had a diffuse peritonitis as a result of a ruptured appendix. After receiving continuous infusion of 10 per cent dextrose in physiologic saline for several days, blood appeared in the urine. The blood in the urine disappeared after discontinuing the infusion. It is, of course, recognized that the kidney complications in these cases may have been due to the acute peritoneal infection, but the prompt disappearance of blood in the urine after discontinuing the intravenous therapy suggests a definite relationship between such treatment and kidney irritation.

The possibility of thrombosis and embolism as a result of intravenous infusions, and especially continuous phleboclysis, is worthy of very careful consideration. The therapeutic use of hypertonic solutions of dextrose and sodium chloride as sclerosing agents in the treatment of varicose veins is significant. Bsteh and Teichmann² record three cases of pulmonary embolism arising from thrombi produced by the injection treatment of varicose veins of the leg and discuss briefly the percentage of such occurrence as reported by other authors. These observations should, of course, be sufficient warning that hypertonic solutions injected into the vein for other therapeutic purposes might result in dangerous thrombosis and embolism. In 1930 Orator

CONTINUOUS INTRAVENOUS INFUSION—ORR

and Schleusing¹¹ reported a case which at autopsy showed pulmonary and cerebral emboli, the latter causing death. Continuous infusion of dextrose was given into the left basilic vein through a glass cannula. At the site of injection, a thrombus formed which was considered the source of the lung and brain emboli. The brain emboli were possible because of a patent foramen ovale. These authors recognized the need of infusions when quick relief is desirable, but state that the general use of continuous infusion should be discouraged. Friedrich and Buchaly⁶ have described two patients dead with pulmonary embolism in less than one year attributed to continuous phleboclysis. The authors have suggested that infusions be given over shorter periods of time; that the site of injection be changed frequently; that the solutions, as nearly as possible, be the same in composition and specific gravity as the blood and that this type of therapy be used only when strongly indicated. Strauss¹³ states that "venous thrombosis and thrombophlebitis have increased in spite of the assumption by many that continuous intravenous therapy is harmless." He recorded a patient who died of pulmonary embolism after receiving continuous infusions of dextrose and sodium chloride solutions for five days postoperative. He recommended that this type of therapy be used only when strongly indicated. Quite recently Tomarkin and Strauss¹⁴ have discussed the dangers and contraindications of venoclysis. They point out the important fact that infection at the site of infusions may be a major danger in this type of therapy. One of their patients developed a thrombophlebitis which was later followed by abscesses in the arm and osteomyelitis of the vertebrae and tibia, resulting in death. In a personal demonstration, J. O. Bower¹ of Philadelphia has shown me a specimen of infarcted lung removed from a young man dead of an infected embolus arising from the basilic vein following continuous infusions.

The following report of an embolic death in the University of Kansas Hospital is recorded at this time.

H. C., male, aged fifty-eight, had a bilateral herniorrhaphy under local anesthesia on September 2, 1933. The second day following operation marked distention of the abdomen was present. On the fourth day there was a slight icterus. From the third to the sixth post-

operative days, four liters of physiologic sodium chloride solution were given by hypodermoclysis. In addition to the four liters of physiological sodium chloride given by hypodermoclysis, 3,750 cubic centimeters of a 10 per cent dextrose in physiologic sodium chloride solution were given intravenously on the fifth and sixth postoperative days. Death occurred on the seventh postoperative day. Autopsy revealed no pathology within the abdomen. There was definite thrombosis of the left basilic vein and pulmonary embolism and infarction. It was the opinion of the pathologist that death resulted from pulmonary embolism as a result of an embolus arising from the thrombus in the left basilic vein at the site of infusion.

Recent experimental work lends support to the view that intravenous infusions are a source of some danger. H. E. Carlson,³ while experimenting with peristaltic stimulants, observed two sudden deaths in dogs due to large emboli originating in the jugular vein. In one animal, five injections of a 4 per cent sodium bicarbonate solution had been made into the jugular vein before a final injection of 20 per cent sodium chloride solution loosened an embolus, causing death in five minutes. Autopsy showed a large embolus in the right auricle extending into the right ventricle. In the other animal, an embolus was released from the jugular vein by an injection of 20 per cent sodium chloride solution six days after two previous injections. Death also occurred in this animal within five minutes. The autopsy revealed a large embolus in the pulmonary artery. In a series of experiments on dogs, using continuous infusion of 10 per cent dextrose or physiologic sodium chloride solution, M. J. Rumold¹² has shown that a high percentage of animals thus treated until death showed infarcts and thrombi in the lungs. His animals were partially restrained in cages with a cannula secured by suture in the jugular vein. The solution was given slowly at an average rate of ten to twelve drops per minute. An assistant was in constant attendance day and night to frequently check the rate of flow of the solution. A number 12F soft rubber catheter was used as a cannula. As controls a number 18 sharp steel needle, a gold cannula and a rubber catheter were each placed in the jugular vein of a dog without the infusion to test the effect of the mere presence of a foreign body in the vein. This procedure produced changes in the lungs similar to those found after continuous phleboclysis. Doc-

tor Rumold concluded that a foreign body, such as a cannula, lodged in the vein of a dog produces an inflammatory reaction throughout the wall of the vein and that this foreign body is more active in the production of thrombi than the infused solution. All dogs showed a high incidence of pulmonary infarction and thrombosis after receiving continuous infusion until death. The pulmonary infarcts usually were associated with other pulmonary changes such as pneumonia or edema. These experimental findings indicate that continuous intravenous infusions are not without danger.

Discussion

In 1924 Matas⁹ made the statement in his classic article on "continuous intravenous drip" that "salt infusions, whether by hypodermoclysis, intravenous drip or by any other method of administration are positively contra-indicated in all toxic states in which degenerative changes in the renal epithelium with salt retention occur, and also in all conditions in which pulmonary stasis from an enfeebled cardiovascular circulation predispose to hypostatic edema of the lungs." De Takats⁵ has made the observation that it is undoubtedly possible in a surgical patient, whose cardiac insufficiency is barely compensated, to produce a decompensation with edema and dyspnea by forcing fluids. In support of this statement he records the death of a postoperative thyroid patient, sixty-five years of age, who had received daily 7,000 cubic centimeters of physiologic sodium chloride solution for five days.

We have noted in our laboratory that if very large quantities of salt solution are given to normal dogs they will develop muscular twitchings and tremors, incoordination of muscles and general weakness which will result in death. Two such animals have been observed with a whole blood chloride reading of more than 800 milligrams per 100 cubic centimeters. Doctors Ockerblad and Carlson¹⁰ observed twitchings of the muscles of the entire body in a patient receiving 13 liters of physiologic salt solution by hypodermoclysis in three days following a prostatectomy. The whole blood chlorides in their patient reached 730 milligrams the day before death. The non-protein nitrogen was 75 milligrams and the creatinine was 2.3 milligrams. The autopsy revealed general edema, parenchymatous degen-

eration of the kidneys with early glomerular changes.

Gallie and Harris⁷ state that prolonged use of the more dilute solutions of dextrose (5 and 10 per cent) will occasionally result in thrombosis and should not be given as a routine. They recommend the continuous intravenous administration of physiological salt solution and mention four simple precautionary measures to prevent clotting as follows: (1) The vein should be as small as will accommodate the needle in order to insure as rapid a flow as possible; (2) there should be no cessation in the flow of fluid as this permits blood to regurgitate into the cannula and clot there; (3) it is often useful to permit the fluid to run rapidly for a few minutes to insure a free channel; and (4) if the cannula does become plugged in spite of these precautions, it must be reinserted into another vein.

The presence of a foreign body, such as a needle or cannula, within the lumen of a vein predisposes to thrombosis. It is probable that the rate of flow of the solution and the size of the vein are also important factors. The experimental findings of Rumold support these statements.

The evidence collected from the literature on the subject of continuous infusions as a source of danger from infection and embolism, our own personal clinical observations and the experimental production of thrombosis and embolism have led us to discontinue the use of this method of intravenous therapy. As a substitute we are now giving daily intravenous infusions of 5 per cent dextrose alone or in Ringer's solution⁸ not to exceed 2,000 cubic centimeters in twenty-four hours. This is supplemented by the same solutions plus novocaine given by hypodermoclysis in sufficient quantity to supply the need. The total quantity of fluid rarely exceeds four liters in twenty-four hours. This quantity is promptly reduced at the first sign of edema or kidney irritation.

It seems fair at this time to record the observation that only a few years ago there was a great tendency to undertreat dehydration while at present it is likely to be overtreated. The latter tendency has led to the indiscriminate use of intravenous infusions without thought or knowledge of their possible dangers. Such a valuable means of therapy should be standard-

PHENOLPHTHALEIN ERUPTIONS—LAYMON

ized in so far as possible so that it may be generally used with the maximum of safety.

Conclusions

1. A more widespread knowledge of the fluid requirements of the ill patient is apparently needed.

2. The possible dangers of intravenous infusions are not sufficiently appreciated.

3. It is suggested as a safety factor that the use of continuous infusions be discontinued as a routine method.

4. The intermittent method of giving fluid, dextrose and sodium chloride by vein reduces the tendency to give too much fluid and lessens the likelihood of thrombosis and embolism.

5. Hypodermoclysis is a safer method of giving fluid than continuous phleboclysis.

Bibliography

1. Bower, J. O.: Unpublished data. Personal communication.
2. Bsteh, O., and Teichmann, M.: Fälle von Lungembolie nach Injektionsbehandlung von Varikositäten. *Zentralbl. f. Chir.*, 60:376, (Feb. 18) 1933.
3. Carlson, H. E.: Unpublished data. Personal communication.
4. Clark, J. H.: Acute cardiac dilatation. An ever present danger in intravenous injections. *Jour. Am. Med. Assn.*, 89:21, (July 2) 1927.
5. De Takats, G.: Push Fluids—The surgeon's postoperative order. *Am. Jour. Surg.*, 11:39, (Jan.) 1931.
6. Friedrich, H., and Buchaly, J. F.: Ist intravenöse Dauer-tropfinfusion mit Gefahren verbunden. *Zentralbl. f. Chir.*, 59:131, (Jan. 16) 1932.
7. Galite, W. E., and Harris, R. L.: The continuous intravenous administration of physiological salt solution. *Ann. Surg.*, 91:422, (March) 1930.
8. Horsley, J. S., and Horsley, G. W.: Continuous intravenous injection of dextrose in Ringer's solution. *Arch. Surg.*, 22:86, (Jan.) 1931.
9. Matas, R.: The continued intravenous drip. *Ann. Surg.*, 79:643, (May) 1924.
10. Ockerblad, N. F., and Carlson, H. E.: Unpublished data. Personal communication.
11. Orator, V., and Schleusing, H.: Thrombose und Hirnembolie infolge intravenöser Dauer-tropfinfusion. *Zentralbl. f. Chir.*, 57:2530, (Oct. 11) 1930.
12. Rumold, M. J.: Experimental pulmonary embolism associated with venoclysis. *Arch. Surg.*, 30:685, (April) 1935.
13. Strauss, L.: Thrombose und Lungembolie nach intravenöser Dauer-tropfinfusion. *Zentralbl. f. Chir.*, 59:909, (Apr. 2) 1932.
14. Tomarkin, J., and Strauss, A.: Venoclysis, dangers and contraindications. *Am. Jour. Surg.*, 25:319, (Aug.) 1934.
15. Warthin, H. J.: Massive intravenous injections. *Arch. Surg.*, 30:199, (Feb.) 1935.

PHENOLPHTHALEIN ERUPTIONS*

CARL W. LAYMON, M.D., Ph.D.

Minneapolis

PHENOLPHTHALEIN is a white or slightly yellow powder stable in air, nearly insoluble in water but freely soluble in alcohol. It is formed by the reaction of anhydrous phthalein (commercial form of ortho-phthalic acid, derived from naphthalene) and phenol in the presence of concentrated sulphuric acid. On the addition of alkalis, resulting in the production of sodium and potassium salts, its color becomes deep red due to structural transformations. The compound is thus given its property as an indicator.

Related substances such as resorcinphthalein and pyrogallolphthalein (which are produced by the reaction of phthalein and the phenolic compounds, resorcin and pyrogallol, respectively), the sulphonphthaleins, and the halogenphthalein derivatives are used widely in various branches of medicine as tests of liver and kidney function, indicators in colorimetry and other biochemical analysis, cholecystography, et cetera. The chem-

istry and various uses of the phthalein compounds were thoroughly discussed recently by Bruére.⁴

Phenolphthalein itself has been commonly employed as a cathartic in various forms for the past thirty years.

The usual dose in children is $\frac{1}{2}$ to 1 grain and in adults 5 grains. As Kastle¹² stated, overdose may result in purgation, colic, dyspnea, palpitation, tachycardia and even collapse.

In 1908, Elmer⁷ experimented with the drug in dogs and decided that its cathartic properties depended upon its irritating action on the intestinal mucosa. He found that 5 grains per pound of body weight caused only a moderate diarrhea without toxic effects in the animals and mentioned a patient who had taken 30 to 60 grains daily for fourteen months without harm. Elmer cited the opinions of Vamossey and Tuncliffe that phenolphthalein acted as a hydragogue cathartic due to increase in the osmotic pressure of the intestine. Vamossey found that 87 per cent of the drug was eliminated in

*From the Division of Dermatology, University of Minnesota, H. E. Michelson, M.D., Director; and the Dermatology Service, Minneapolis General Hospital, S. E. Sweitzer, M.D., Chief.

PHENOLPHTHALEIN ERUPTIONS—LAYMON

the stools and that small amounts appeared in the urine only after large dosage.

Abel and Rowntree¹ also conducted extensive experiments on the pharmacologic action of phenolphthalein and stated that its toxicity was low.

Wood²⁸ was of a similar opinion after injecting the compound hypodermically and intravenously in dogs.

McWalter¹⁷ reported no ill results in 1,000 doses of phenolphthalein, using 2 to 6 grains in adults and $\frac{1}{2}$ to $\frac{3}{4}$ grain in children.

Orland²¹ observed a child three years old who took 1.8 grams of phenolphthalein and suffered no more than a stomach ache and diarrhea. The drug was recovered from both the urine and stool though the greatest part of the excretion was through the feces.

On the other hand, Hydrick¹¹ observed albuminuria in twenty patients who had taken 1 to 2 grains of phenolphthalein.

Furbinger⁸ reported a case of severe poisoning from laxative drops containing phenolphthalein. Six-tenths gram of the latter drug caused severe diarrhea, vomiting, cyanosis, palpitation, tachycardia, and anuria. Later, casts and albumin were found in the urine. He mentioned similar cases observed by Schwartz, Blumenthal and Zabel.

Rosenstein²⁴ described the case of a female who developed diarrhea and hemorrhagic nephritis following the ingestion of anti-fat remedy containing the drug.

Martinson,¹⁸ in 1924, treated a similar case in a child who suffered an acute toxic nephritis and anemia which lasted for two months, and which was caused by "Boal's Rolls" containing phenolphthalein.

This drug is contained in varying amounts in a multitude of patent medicines usually used as cathartics. Its mild action and non-irritating qualities have increased its popularity, hence it is used extensively. Ex-Lax, Feen-a-Mint, and Phenolax are examples of the most widely used preparations containing phenolphthalein. Wise and Sulzberger²⁷ brought out that the drug also may be embodied in other vehicles such as: (1) certain mouth washes and lotions of a pink or reddish color; (2) most sodium perborate (aromatized) preparations for use in the mouth and for douches; (3) possibly some tooth pastes and (4) pink cake icings in certain instances.

Thus it may be seen that the possibility of contact with phenolphthalein is extremely difficult to exclude when the drug is suspected as a cause for a certain dermatosis. Wise and Sulzberger believe that small amounts of the drug may be absorbed from mouth washes through the mucous membrane.

Eruptions Due to Phenolphthalein

The first formal article devoted to the subject was written by Wise and Abramowitz,²⁶ in 1922. This included a review of previously observed examples of the condition and a thorough clinical and histologic study of five cases in addition to a discussion of the toxicology and proprietary remedies containing the drug.

Previously, in 1918, Abramowitz² reported five cases of persistent erythema multiforme, one of which was definitely thought to be caused by phenolphthalein at the time of the report. Further study showed that all were in reality manifestations of phenolphthalein idiosyncrasy.

Within a period of a few years (from 1916 to 1920) several other cases of phenolphthalein eruption were presented before dermatologic societies as erythema multiforme and iris (McKee and Wise¹⁴), erythema multiforme perstans (McKee and Wise¹⁵), erythema maculatum perstans (McKee and Wise¹⁶), erythema perstans (H. Fox⁸), recurrent erythema multiforme (Harris¹⁰), and dermatitis medicamentosa (Rosen²²).

Among more recent contributions to the subject were those by Novy,²⁰ and Wise and Sulzberger.²⁷

The cutaneous lesions most frequently evoked by phenolphthalein are identical with the comparable "fixed" eruptions produced by antipyrin. The eruption as a rule consists of pink, dusky red or deep purple plaques situated anywhere on the body but most commonly over the lumbo-sacral region or proximal portions of the extremities. Upon involution of the active lesions, dark brown, slightly scaly patches remain for several weeks or even months. Wise and Abramowitz observed palmar and plantar lesions.

Ayres³ reported an eruption limited to the face which was caused by "Phenolax." The lesions were multiple, pin head to dime in size, at first pink and later yellow resembling verruca plana.

Corson and Sidlick⁶ observed a patient with urticaria caused by phenolphthalein contained in a patent medicine "Carbolax with Cocoa." The

PHENOLPHTHALEIN ERUPTIONS—LAYMON

patient treated by Levin¹³ presented similar lesions caused by "Partola."

Campbell⁵ reported a bluish staining of the lunulae of the finger nails of both hands which was evoked by "Ex-Lax."

Erosive and bullous mucous membrane lesions are also relatively frequent, occurring on the lips, tongue, mucosa of the cheeks or genitals. Early syphilis, pemphigus or erythema multiforme may be mimicked by these lesions.

Rosenbloom²³ reported a case of recurrent nasal herpes caused by phenolphthalein in "Alophen" pills. The eruption disappeared upon discontinuing the drug.

Silberstein²⁵ observed a patient who presented plaques on the tongue, bullous stomatitis and herpetic lesions on the penis caused by phenolphthalein. He was also called to see a patient who suffered with hemorrhagic lesions in the eye following the ingestion of "Ex-Lax."

Abramowitz,² and Wise and Abramowitz²⁶ also cited various examples of the different manifestations of idiosyncrasy to phenolphthalein.

Histology

(Dr. H. E. Michelson)

The histology of phenolphthalein eruptions varies directly with the acuity of the clinical manifestations. It is essentially an acute inflammation involving the epidermis and upper portions of the cutis and has no characteristics which are pathognomonic. The epidermis seems to bear the brunt of the insult and I have seen all degrees of destruction. In the more severe cases there is almost complete separation of the epidermis from the cutis which is brought about by inflammation and edema of the upper portion of the cutis. In the macular lesions there are areas of parakeratosis alternating with lamellar hyperkeratotic scales. All of the layers of the epidermis take part in the process. There is both inter- and intracellular vesicle formation and there are degenerative nuclear changes particularly in the granular layer. In the vesicular as well as in the macular lesions the basal layer is disrupted, its continuity being broken and some of the pigment bearing cells being carried into its upper portions. There is no marked increase in the pigment content of the individual basal cells. The infiltrate in the cutis is about the same in all types of the eruption, varying only in degree. It is made up of lymphocytes and polymorphonuclear leukocytes arranged in rather massive collections and

about dilated small vessels. There is definite edema especially near the basal layer. In some instances there is a horizontal layer of infiltrate directly beneath the basal membrane. Large chromatophores may be seen scattered throughout the cutis. Although the general picture is much the same as that of erythema multiforme it is my impression, gained from the sections of phenolphthalein eruption which I have examined, that the epidermis is more disturbed than in erythema multiforme.

Mechanism

Phenolphthalein eruptions are of course examples of drug allergy though the exact location of the hypersensitivity is not known. Wise and Sulzberger²⁷ found that both patch and intradermal tests were negative in their experimental studies of phenolphthalein idiosyncrasy.

In further experiments with autogenous, full thickness skin grafts it was found that normal skin grafted upon previously affected areas reacted with the formation of a typical lesion after ingestion of the drug, while previously affected skin, grafted onto a previously normal site remained unaffected. These results were exactly opposite to those of Naegeli¹⁹ and his coworkers.

Based on their own work, Wise and Sulzberger believed that the hypersensitive or shock tissue involved deeper structures such as blood vessels and nerves rather than the epidermis or superficial cutis.

Novy concluded after a series of experiments that reactions to phenolphthalein were due to the substance as a molecule rather than split products or chemical impurities. Perhaps the further observation and study of examples of phenolphthalein and other drug eruptions will some day offer a solution to the now existing riddles of this type of allergy.

Case Reports

Case 1.—G. E., female, aged thirty-one, had repeated attacks of acute, erythematous maculo-papular lesions on the hands, forearms, neck and thighs since October, 1934. There were associated bullous lesions in the mouth. On questioning, the patient stated that the evening before each attack she had taken "De Witt's Early Risers" as a cathartic. During the period of observation she was given a three grain tablet of phenolphthalein, which precipitated another attack of the eruption. There was no family history of allergic disease and the patient had no other drug or food idiosyncrasies. A biopsy showed no unusual histopathologic findings. The

PHENOLPHTHALEIN ERUPTIONS—LAYMON

microscopic picture was consistent with a diagnosis of phenolphthalein eruption.

Case 2.—F. C., male, aged forty-five, had eruption on the face, hands, and wrists on several occasions over a period of two months, appearing each time after taking "Ex-Lax." The lesions were the violaceous plaques

Summary

1. The chemistry, toxicology, and sources of phenolphthalein in various forms are briefly reviewed.
2. The clinical and histologic appearances of



Fig. 1. Case 1. (See text.)



Fig. 2. Case 2. (See text.)

considered characteristic of phenolphthalein eruption. Except for the present complaint the patient had no other allergic disorders. The eruption was reproduced by giving the patient 3 grains of phenolphthalein. The following tests were performed:

	Normal skin	Affected skin
Scratch	neg.	neg.
Patch (after 24 hours)	neg.	neg.
Passive transfer	The patient's serum was injected intradermally into two normal controls. The later ingestion of the drug by the controls caused no eruption at the sites of the injections.	

The microscopic findings in this case were in accord with those which were previously outlined by Dr. Michelson.

phenolphthalein eruptions are presented. The exact mechanism of this type of drug idiosyncrasy is not yet known.

3. Two cases of characteristic phenolphthalein eruptions are reported.

Literature

1. Abel, John J., and Rountree, L. G.: On the pharmacological action of some phthalins and their derivatives, with especial reference to their behavior as purgatives. *Jour. Pharmacol. and Exper. Therap.*, 1:231, 1909.
2. Abramowitz, E. W.: Erythema multiforme associated with cutaneous pigmentation (melanin). Clinical and pathological report of five cases. *Jour. Cut. Dis.*, 36:11, 1918.
3. Ayres, Samuel, Jr.: Phenolphthalein dermatitis. *Jour. A. M. A.*, 77:1722, 1921.
4. Bruère, M.: Applications thérapeutiques, cliniques et biochimiques des phthalins, des sulphonesphthalins et de leurs dérivés halogénés. *Arch. de med. et pharm. milit.*, 88:289, 1928.
5. Campbell, C. Gordon: Peculiar pigmentation following the use of a purgative containing phenolphthalein. *Brit. Jour. Dermat. and Syph.*, 43:186, 1931.

FRONTO-ETHMO-SPHENOID OPERATION—LILLIE AND WILLIAMS

6. Corson, E. F., and Sidlick, D. M.: Urticaria from the habitual use of phenolphthalein. *Jour. A. M. A.*, 78:882, 1922.
7. Elmer, Warren Philo: The action and dosage of phenolphthalein. *Med. Rec.*, 74:838, 1908.
8. Fox, H.: Erythema perstans following use of phenolphthalein (Case presentation). *Jour. Cut. Dis.*, 36:252, 1918.
9. Furhinger: Schwer Vergiftung durch Laxative-Drops (Phenolphthalein). *Deutsche med. Wochenschr.*, 43:842, 1917.
10. Harris, Fred: Melanoderma from recurrent erythema multiforme (Case presentation). *Jour. Cut. Dis.*, 37:258, 1919.
11. Hydrick, J. L.: Albuminuria following the ingestion of phenolphthalein. *Proc. Am. Soc. Biol. Chem.*, 1914, p. 36.
12. Kastle, J. H.: Conduct of phenolphthalein in the animal organism. *Hyg. Lab. Bull.*, 21:29-23, 1905.
13. Levin: Erythema perstans (phenolphthalein) (Case presentation). *Arch. Dermat. and Syph.*, 6:230, 1922.
14. McKee and Wise: Erythema multiforme and iris (Case presentation). *Jour. Cut. Dis.*, 34:846, 1916.
15. McKee and Wise: Erythema multiform perstans (Case presentation). *Jour. Cut. Dis.*, 25:554, 1917.
16. McKee and Wise: Erythema maculatum perstans (Case presentation). *Jour. Cut. Dis.*, 36:190, 1918.
17. McWalter, J. C.: 1,000 Doses of phenolphthalein. *Lancet*, 2:1141, 1915.
18. Martinson, Herman: Toxic nephritis. *Arch. Ped.*, 41:578, 1924.
19. Naegeli, de Querwain, and Stalder: Cellulaer Sitz der Allergie beim fixen Antipyrin Exanthem. *Klin. Wochenschr.*, 9:924, 1930.
20. Novy, Frederick G., Jr.: Phenolphthalein eruption. Experimental data on its causation. *Arch. Dermat. and Syph.*, 26:125, 1932.
21. Orland: Ein Fall von unbeobachteter hoher Phenolphthaleindosis bei einem Kinde. *Med. Klin.*, 9:257, 1913.
22. Rosen, I.: Dermatitis medicamentosa (Case presentation). *Arch. Dermat. and Syph.*, 1:355, 1920.
23. Rosenblom, J.: Report of case of nasal herpes due to ingestion of phenolphthalein. *Jour. A. M. A.*, 78:967, 1922.
24. Rosenstein, Paul: Der Unfug mit Phenolphthalein. *Münch. med. Wochenschr.*, 67:263, 1920.
25. Silberstein, Leo: Der Phenolphthalein. *Unfug. Therap. Halbmonatsh.*, 34:306, 1920.
26. Wise, Fred, and Abramowitz, E. W.: Phenolphthalein eruptions. *Arch. Dermat. and Syph.*, 5:297, 1922.
27. Wise, Fred, and Sulzberger, Marion B.: Drug eruptions. I. Fixed phenolphthalein eruptions. *Arch. Dermat. and Syph.*, 27:549, 1933.
28. Wood, Horatio C.: The use of phenolphthalein as a cathartic. *Rec. Philadelphia Gen. Hosp.*, 7:183, 1909.

THE EXTERNAL FRONTO-ETHMO-SPHENOID OPERATION

A Critical Review of the Literature and Details of the Technic in Use at The Mayo Clinic

HAROLD I. LILLIE, M.D., and HENRY L. WILLIAMS, M.D.

Rochester, Minnesota

OWING to the recent increase of interest in the external approach to the upper group of paranasal sinuses, it was thought that a critical review of the literature as well as a presentation of the technic that seems most satisfactory to us at The Mayo Clinic might be of interest.

In 1893, Jansen published his paper on, "Opening the Paranasal Sinuses in Chronic Suppuration," basing his operation on the surgical principles advocated by Küster for the treatment of suppuration in rigid walled cavities. He described a curved incision, extending along the brow from the supra-orbital notch to the inner end of the brow, and then downward around the inner canthus of the eye. The periosteum was elevated over the anterior segment of the orbital wall and the floor of the frontal sinus. The frontal sinus was then entered through the floor at the medial angle and the floor of the frontal sinus removed. Jansen particularly stressed the removal of the fronto-ethmoid and infundibular cells, giving as his opinion that the frontal sinus was never involved without the simultaneous involvement of these groups of cells. He then advanced posteriorly

as far as the inflammatory condition in the anterior and posterior ethmoid sinus extended, and he opened the sphenoid sinus if it was also involved.

In 1906, Ritter described what he reported to be the Jansen technic, and he added an original technic for turning the anterior wall of the sinus lateralward as a bone flap.

In 1921 and 1929, Lynch described the technic of a radical operation on the frontal sinus patterned after that described by Knapp and made some noteworthy suggestions. He insisted that the periosteum be elevated only from the lower half of the incision, stating that if the periosteum were elevated over the frontal plate of the frontal bone, it was not likely to reapply itself to the bone again, and in consequence there would develop, either immediately or in three months, a periostitis with elevation, and a sequestrum of more or less good size would be cast off. After removing the floor of the frontal sinus, he stressed the importance of obliterating the angle formed by the orbit, or sinus wall of the floor of the frontal sinus, with its posterior or brain wall, especially at the external angle, for he said, "This is the area that most often harbors the infected mucous membrane that causes failure." He then carefully removed the entire common

*From the Section on Otolaryngology and Rhinology, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Minnesota Academy of Otolaryngology at Rochester, Minnesota, April 12, 1935.

FRONTO-ETHMO-SPHENOID OPERATION—LILLIE AND WILLIAMS

sinus orbital wall. The mucous membrane of the sinus was carefully curetted away, as it was his opinion that any remaining mucous membrane, degenerated or not, would conduce to failure. He then removed the nasal process of the superior maxilla, the lower lateral edge of the nasal bone, and the lacrimal bone which, with the removal of the entire lamina papyracea of the ethmoid bone resulted in complete evisceration of its cellular structures. The fovea frontalis was then carefully freed from any remaining cell walls and the mucous membrane was meticulously removed. Because of the difficulty he experienced with collapse medialward of the soft parts of the orbit, shutting off drainage, a rubber tube $\frac{1}{8}$ inch (0.3 cm.) in diameter was placed in the region of what was the beginning infundibulum of the sinus.

In 1926, Sewall published a paper on, "The External Operation on the Ethmo-Sphenoid Frontal Group of Cells Under Local Anesthesia." He introduced an excellent method of local anesthesia and advocated the small skin incision medial to the inner canthus. In a later paper, because of great difficulty in preserving the frontonasal opening after removal of the frontal process of the superior maxilla, Sewall¹¹ modified his procedure to retain a portion of the lacrimal bone and frontal process as an osteoplastic flap. He also described an original technic for tying the anterior and posterior ethmoid vessels and the sphenopalatine artery. He was also the first to advocate removal of the floor of the sphenoid sinus in cases in which the sinus was very deep and the downward slope of the floor interfered with drainage.

Smith,¹² in his paper published in 1934, adopts the method of anesthesia, type of incision, method of ligating the vessels, and removal of the floor of the sphenoid sinus advocated by Sewall, but otherwise he follows very closely the technical procedures suggested by Lynch, especially as to removing the angle between the posterior and inferior walls of the frontal sinus and as to meticulously removing the lining membrane here and in the ethmo-sphenoid region. He has added the technical procedures of wiping off the adherent membrane with gauze balls dipped in 5 per cent picric acid and 35 per cent acetone solution and covering the tube inserted into the frontal sinus with a skin graft, with the raw surface out, in an attempt to maintain the patency of the opening.

At the clinic, the external method of opening the superior group of sinuses was adopted in selected cases soon after the publication of Lynch's paper, and a small group of cases was reported in 1927. These were all cases with external manifestations and, unfortunately, in the one case in which local anesthesia was used orbital cellulitis developed, which had the effect of causing us to avoid this method of anesthesia for some time.

It was observed that the falling in of the soft tissues had a tendency to produce closure of the nasofrontal opening, and it occurred to one of us (Lillie) that if the frontal process of the superior maxilla was preserved it would prevent this tendency. This detail was consequently adopted and since that time we have experienced much less difficulty in maintaining the patency of the frontonasal opening. Lillie and Anderson stressed this detail in advocating the two-stage operation for chronic suppuration of the frontal group of cells, and they also pointed out that when an adequate intranasal operation was possible, the condition cleared up without further procedures being necessary. This point was also emphasized in Anderson's paper in 1928.

We believe Sewall's osteoplastic flap to be in all ways a better method than the insertion of an epithelial graft into the nose, especially when the lining mucous membrane has been entirely removed. Smith¹³ admitted failure of his skin graft method in 10 per cent of the cases in which it had been used, and the percentage may be higher, as Sewall points out that many patients may be symptom-free for long periods even when no communication can be found between the frontal sinus and the nose. Another danger might be pointed out in the use of epithelial grafts in the nose. We have observed the formation of a cholesteatoma in the maxillary sinus in a case in which a skin graft was used to replace the lining membrane elsewhere. While this method has had too short a use in the frontal region as yet to produce this complication, we feel that there is a great danger of this complication appearing as time passes.

In insisting on complete removal of diseased and normal membrane in the angle, we feel that Lynch incorrectly interpreted the factors producing late complications. In a paper on post-operative complications following the radical external operation on the frontal sinus, one of us (Lillie) pointed out that in certain cases in

FRONTO-ETHMO-SPHENOID OPERATION—LILLIE AND WILLIAMS

which the frontal sinus extended far lateralward, leaving a cellular extension at the level of the opening of the frontonasal duct, the upward bulging of the orbital contents after the Lynch type of operation had a tendency to form a pocket without free drainage. If mucous membrane is

nasal technic requires considerable experience, skill, and anatomic knowledge, and that in inexperienced hands the external approach should be the favored method of attack. After the operator has familiarized himself with the relationships by the external route he is better prepared

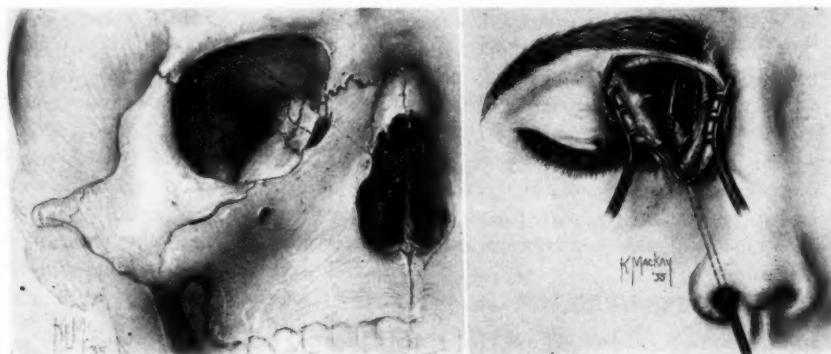


Fig. 1. Portion of bone removed to enter frontal sinus.

Fig. 2. Method of removing agger cells by curetting from above downward.

left in such a situation, its natural tendency to secrete is likely to result in the production of a mucocele. We feel that Lynch interpreted this phenomenon as a pathologic rather than as a physiologic effect, and that this paralogism applied to the mucous membrane as a whole convinced him of the necessity of its total extirpation. If his reasoning were correct, it is our opinion that the Jansen type of operation would be doomed to failure, because it is obviously impossible to remove entirely the mucous membrane in the cleft superiorly between the anterior and posterior walls of the frontal sinus, where the walls run very close together for a considerable distance, whether the mucous membrane is previously loosened by packing the sinus with gauze dipped in picric acid solution or not. If it were desirable to remove this membrane, Ritter's technic would be necessary. In our experience mucous membrane need be removed only in those locations where drainage cannot be secured and a mucocele might result.

In advising the external operation our requirements are very selective. We fail to agree with the dictum of Skillern as to the ineffectiveness of the intranasal approach in eradicating disease in the ethmoid sinuses, and indeed we find that by our intranasal technic the results frequently are excellent. We believe that an adequate intra-

to handle the more difficult intranasal technic. We, therefore, do not distinguish these technics as radical and conservative, as both are radical in the proper sense of the word, in that they relieve the source of the disease when they are properly performed.

We require first that disease of the frontal and ethmoid sinuses together be definitely established clinically. Roentgenologic diagnosis alone is considered insufficient evidence of present disease, and we have not found patients subjectively relieved either as to local or general symptoms when identification of disease depended on especially refined methods of diagnosis. Proper diagnosis requires sufficient time for definite identification of the source of suppuration, with thorough investigation of all the cell groups. When investigation has been thoroughly carried out, we decide on an intranasal or external approach on the further grounds of whether there is evidence of groups of cells present which will be difficult or impossible to reach by the intranasal approach, or whether so much osteosclerosis has been created either by disease or by previous operation that the intranasal technic is made impossible without the use of dangerous force.

The cellular structures recognized as difficult to open intranasally are a flat group of cells lying along the lamina papyracea and the infra-

RADIUM TREATMENT OF NON-MALIGNANT CONDITIONS—FRICKE

orbital group described by Sewall. Judgment as to the amount of sclerosis making necessary the external approach is influenced somewhat by the skill and experience of the operator in the intranasal technic. The two-stage operation is still favored, as oftentimes patients are "cured" without recourse to the external operation. The technic used at present has evolved from the technic as advocated by Lynch, with such additions as seemed advisable. Individualization of the case as a surgical problem is stressed.

Technic

Our preoperative technic and method of anesthesia are essentially those described by Sewall. We prefer the incision recommended by Jansen, as we find the cosmetic result equally good and the exposure much better with the longer incision. We do not find that total removal of the lining membrane of the frontal or ethmoid cells is necessary for a good postoperative result, and we remove only the lining membrane from the lateral extension of the frontal sinus if it seems probable that the soft tissues of the orbit will bulge upward to close off this portion of the sinus and produce a mucocele. We can see no merit in a time-consuming technic, however interesting in itself, which produces no effect toward the well-being of the patient.

The chief, and we believe the most important, difference in our technic from the previous descriptions is in our treatment of the frontal process of the superior maxilla (Fig. 1). The nose is entered through the floor of the lacrimal fossa,

and the bone over the anterior ethmoid cells is removed posteriorly, widely enough to admit the Lillie modification of Kerrison's mastoid rongeur. The floor of the frontal sinus is removed with this instrument, care being taken not to remove any portion of the frontal process of the superior maxilla which will later hold the tissues of the orbit from collapsing into the frontonasal opening. The agger nasi cells are removed by curetting forward between the frontal process of the superior maxilla and the septum (Fig. 2). Our procedure is otherwise essentially that described by Sewall.

Bibliography

1. Anderson, C. M.: The Lynch type of radical frontal sinus operation. *Minnesota Med.*, 11:461-464, (July) 1928.
2. Jansen, A.: Zur Eröffnung der Nebenhöhle der Nase bei chronischer Eiterung. *Arch. f. Laryngol. u. Rhinol.*, 1:135-157, 1894.
3. Knapp, A. H.: A case of extensive chronic empyema of the frontal and ethmoidal sinuses with exophthalmos; operation; recovery. *Arch. Ophth.*, 28:50-54, 1899.
4. Küster, E.: V. Über die Grundsätze der Behandlung von Eiterungen in starrwandigen Höhlen, mit besonderer Berücksichtigung des Empyems der Pleura. *Deutsch. med. Wochenschr.*, 15:233-236, (Mar. 21) 1889.
5. Lillie, H. I.: Postoperative complications of the radical external operation on the frontal sinus. *Arch. Otolaryngol.*, 14:793-796, (Dec.) 1931.
6. Lillie, H. I., and Anderson, C. M.: The two-stage operation for suppurative frontal sinusitis with external manifestations. *Arch. Otolaryngol.*, 5:152-161, (Feb.) 1927.
7. Lynch, R. C.: The technic of a radical frontal sinus operation which has given me the best results. *Laryngoscope*, 31:1-5, (Jan.) 1921.
8. Lynch, R. C.: Ethmoidal sinusitis, external radical approach. *Tr. Am. Acad. Ophth. and Oto-Laryngol.*, 438-445, 1929.
9. Ritter, Gustav: Eine neue Methode zur Erhaltung davor deren Stirnhöhlenwand bei Radikaloperationen chronischer Stirnhöhlenleiterungen. *Deutsch. med. Wochenschr.*, 2:1294-1296, (Aug. 9) 1906.
10. Sewall, E. C.: External operation on the ethmosphenoidal frontal group of sinuses under local anesthesia. *Arch. Otolaryngol.*, 4:377-411, (Nov.) 1926.
11. Sewall, E. C.: Frontal ethmosphenoidectomy. Experience with this operation under local anesthesia; a new osteoplastic flap. *Arch. Otolaryngol.*, 8:144-150, (Aug.) 1928.
12. Skillern, R. H.: Quoted by Smith.¹³
13. Smith, Ferris: Management of chronic sinus disease. *Arch. Otolaryngol.*, 19:157-171, (Feb.) 1934.
14. Smith, Ferris: Personal communication to Dr. Lillie.

THE RADIUM TREATMENT OF NONMALIGNANT CONDITIONS*

ROBERT E. FRICKE, M.D.†

Rochester, Minnesota

NO BRANCH of medicine has developed so rapidly and surely as therapeutic radiology during its brief span of about thirty-five years. The use of radium in the treatment of disease is increasing with the increase in our knowledge of disease and of the reaction of the tissues to

irradiation with gamma rays. Importations of radium into the United States for medical purposes have been steadily increasing; during the past decade nearly a third of a pound, costing more than \$6,000,000, has been purchased from abroad, and the heaviest importations have been since 1929.⁴ This testifies to the intensive interest in radiology in this country, as the world's supply today is approximately only 1½ pounds

*Read at Joint Meeting of the American Therapeutic Society and the Atlantic County Society at Atlantic City, New Jersey, June 7, 1935.

†From the Section on Therapeutic Radiology, The Mayo Clinic, Rochester, Minnesota.

RADIUM TREATMENT OF NON-MALIGNANT CONDITIONS—FRICKE

or 700 gm. Of this world total of 700 gm., about 238 gm. are in use in the United States in 287 hospitals and in the private possession of about 400 physicians.

This small world's supply of radium is in constant use against mankind's arch enemy, cancer. Radium, roentgen rays, and surgery form the combination best fitted to cope with malignant disease, which is so widespread that it ranks second to heart disease as a cause of death.

The hindrance to the development of radium treatment has been the high cost of the element. This, of course, is due to its scarcity, the tremendous cost and lengthy process of its extraction, and to the fact that monopolies have been able to maintain the price over long periods. From 1912 to 1926, the United States furnished most of the world's radium at prices varying from \$170,000 to \$120,000 per gram. Since 1926, the far richer ores of the Belgian Congo have gradually dropped the price to \$50,000 per gram, completely halting production in the United States. At the present time, development of still richer fields in Canada, discovered in 1930, offers promise of cheaper radium and the hope for greater supplies for medical use.

In my opinion, as more radium becomes available, future development in medical radiology will center in the treatment of non-malignant conditions. Up to the present, most of the world's radium supply and the attention and skill of radiologists have been devoted to treatment of the more urgent malignant lesions. A start has been made in this direction, however, as many types of benign lesions are now being successfully treated with radium and more experience is gradually developing in this field.

I have analyzed the cases in which patients were treated with radium at The Mayo Clinic during the past several years, and it is interesting to note that 30 to 33 per cent of the total number of patients treated with radium each year have been treated for non-malignant conditions. In this paper a study was made of patients with non-malignant conditions, who were treated with radium in 1934 at the clinic (Tables I and II). Two hundred fifty-three patients, with fourteen types of non-malignant disease, received radium treatment during that year; some of the more common conditions treated will be discussed briefly and some of the principles and difficulties encountered in radium therapy will be mentioned.

TABLE I. PATIENTS WITH NONMALIGNANT CONDITIONS TREATED BY RADIUM DURING 1934

	Patients Treated			Type of Treatment		
	New	Old	Total	Com-	Lim-	Total
Actinomycosis	6		6	8		8
Adenomyoma	4		4	4	1	5
Conjunctivitis	4	4	8	11		11
Erythromelalgia	2		2	1	1	2
Hemangioma	32	17	49	72	2	75*
Hygroma, cystic	2	3	5	7		7
Inflammatory conditions	5	1	6	2	4	6
Keloids	20	10	30	34		35*
Keratoses	2	1	3	3		3
Lymphangioma	2	3	5	7		7
Lymphedema of face	3	1	4	4		4
Menorrhagia	83	2	85	85		85
Parotitis, acute	30		30	27	1	30†
Verruca	6		6	7		7
Miscellaneous	9	1	10	11		11
Total	210	43	253	283	9	296

*Includes one patient who received prophylactic treatment.

†Includes two patients who abandoned treatment.

TABLE II. EARLY RESULTS BASED ON CLINICAL IMPRESSIONS AT RETURN VISITS

	1933		1934	
	Number	Per cent	Number	Per cent
Cured	4	4.9	4	3.8
Clinically cured	7	8.5	16	15.4
Improved	71	86.6	79	76.0
Unimproved	0	0	5	4.8
Died	0	0	0	0

Menorrhagia

Eighty-five patients were treated with radium during 1934 for menorrhagia of the menopause, whether caused by small uterine fibroids or ovarian dysfunction. The intra-uterine application of radium for benign hemorrhage of the menopause is safe and dependable, and the method is practically specific. The almost universal good results are so well known as to need no comment. A review of 295 cases in which patients who were treated at the clinic in 1926 and 1927 were traced, revealed only 2.02 per cent of failures.¹ Cases, however, must be carefully selected; the presence or past history of pelvic inflammatory disease contraindicates the intra-uterine application of radium as it also does any

RADIUM TREATMENT OF NON-MALIGNANT CONDITIONS—FRICKE

minor surgical treatment of the cervix. A recent report emphasizes the danger of peritonitis and death in these cases following as harmless a procedure as cauterization of the cervix.³ When

Hemangioma

Forty-nine patients with hemangioma were treated during 1934. This condition is congenital and the best results from treatment are

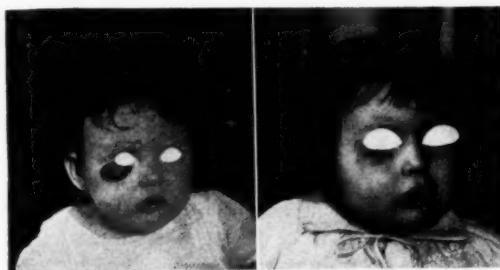


Fig. 1. Cavernous hemangioma: *left*, before treatment; *right*, after two applications of radium.

a suspicious history of pelvic inflammatory disease is obtained, vaginal radium treatment and teleradium or roentgen therapy over the ovarian regions is a safe procedure. Functional menorrhagia of women below the age of menopause should be treated cautiously with small or moderate doses of radium if other medical measures have failed.

If menorrhagia is attributable to uterine fibroids, radium or roentgen treatments afford perfect results in well-selected cases. Diagnostic curettage should be performed to exclude carcinoma of the fundus, and the radium applicator is best introduced at this procedure. There are several contraindications to the intra-uterine treatment of fibroids with radium, and these are the cases in which surgery is preferable. Subperitoneal fibroids are often too far from the uterus to be sufficiently affected by the rays, and submucous fibroids are best treated surgically because of the slough and infection that may follow radium treatment. Fibroid tumors, large enough to cause pressure symptoms had best be excised, as shrinkage of the tumor, following radium treatment, is gradual and often requires months. Fibroid tumors that grow rapidly, or are soft and degenerating, should be treated surgically; patients with a history of pelvic inflammatory disease should be operated on or receive vaginal radium treatments and teleradium or roentgen therapy. If these contraindications are observed, the results should be satisfactory in 85 to 90 per cent of the cases.⁷

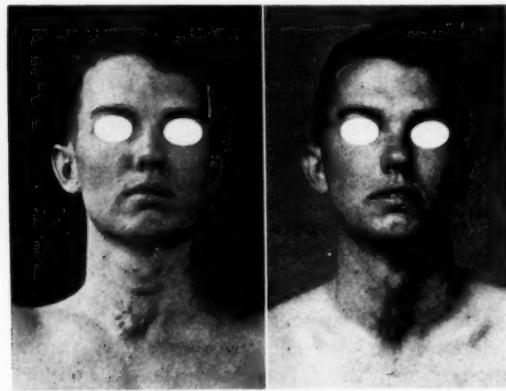


Fig. 2. Extensive keloid: *left*, before treatment; *right*, after only one application of radium.

obtained in infancy. Treatment is important in order to forestall hemorrhages from lacerating injuries and the possibility of malignant degeneration later in life. The simple vascular hemangiomas and the small, cavernous types yield excellent results (Fig. 1). The treatment is tedious to apply, is given cautiously, and usually requires three or four, or more, applications at intervals of from three to four months. The endarteritis and fibrosis resulting from treatment of a hemangioma leads to the formation of flattened, pale scar tissue. Plaque treatment is used, yielding considerable beta radiation, and if the tumor extends much below the surface of the skin, screened radium at a distance is also applied. The results of treating "port wine marks" are not good and treatment of this type of condition is not urged; however, considerable improvement may occur with use of the radium plaque kept moving over the surface of the tumor.^{6,8}

Keloids

Thirty patients with keloids received treatment during 1934; the results in most cases proved excellent (Fig. 2). Very heavily-filtered radium is used, employing 2 mm. of lead, and the tubes are fastened directly to the lesion with adhesive tape. Usually one or two treatments

RADIUM TREATMENT OF NON-MALIGNANT CONDITIONS—FRICKE

suffice; the unsightly lesions diminish and their color fades, and the stinging and burning sensations are alleviated.

Acute Parotitis

This is one of the serious complications of major operations, especially following those on the gastro-intestinal tract. Unilateral or bilateral infections of the parotid gland of these patients who are debilitated by the serious operation is a dangerous condition. Rankin and Palmer, reviewing a small series of cases at the clinic, found a mortality of about 40 per cent when patients were not treated by radium. This mortality dropped to 5 per cent when radium treatments were applied. The essential factor in successful treatment is early application; radium surface packs are applied, day or night, at the first evidence of swelling of the gland. The radium element tubes, containing 50 mg. of radium sulphate, filtered with 2 mm. of lead, are applied at a distance of 1 inch (2.5 cm.) from the skin, and only a moderate dose is given. The entire parotid region is fully covered by the treatment, usually in two applications. Radium treatment tends to abort suppuration; when suppuration does occur and surgical incision is necessary, the mortality is much greater.

Principles of Treatment

The exact mode of action of the beta and gamma rays in benign disease is not quite so clear cut as in malignant conditions; in the latter we have a specific lethal effect of the rays on the cancer cells. However, a great deal has been learned regarding the specific sensitiveness of the various tissues of the body to irradiation. The favorable action of radium on acute parotitis has been mentioned. Roentgen or radium therapy has proved very effective in other acute or chronic inflammatory processes, such as carbuncles, boils, erysipelas, tuberculosis, actinomycosis, and so forth. Considering acute conditions, one plausible theory has been advanced by Desjardins. In the presence of an inflammatory reaction, the bodily defenses quickly erect a barrier of leukocytes to check and kill the invading organisms. Gamma rays and roentgen rays destroy leukocytes, especially lymphocytes, and hence break down this barrier. Strange to relate, however, the suppurative process, if treated early, is aborted and resolves. It seems reasonable to suppose, therefore, that the de-

stroyed leukocytes liberate whatever protective lytic agents and antibodies they may contain, and that these combat the infection rapidly and surely. Gamma rays and roentgen rays are bactericidal *in vitro* but not in tissues in the therapeutic dosage usually used. In chronic inflammation, fibrosis is produced and serves to wall off the offending organisms, as in tuberculosis of the skin and lymph nodes and in actinomycosis.

The dangers and risks of the radium treatment of benign conditions are serious. Overdosage or underfiltration may produce intractable skin lesions which can only be treated by widespread excision; very slow to heal, these lesions may undergo malignant changes. Nothing more disastrous can be imagined than treating a simple benign condition and, by such treatment, producing a cancer. However, as a rule, this can happen only through gross carelessness or ignorance in applying treatment, as the dosage of radium employed for benign lesions is moderate and is only a fraction of that used in the treatment of malignant lesions. This fortunate fact permits a large margin of safety. Enough has been stated about these various benign lesions to indicate that there is no set formula as to dosage for each condition. Each lesion is an entity requiring special study and experience for its successful treatment.

Summary and Conclusions

The value of radium as a therapeutic agent is widely recognized, especially in this country, and especially in recent years. The heaviest importations of radium have been made since 1929.

At present, the supply of radium and the skill and ingenuity of the radium therapist are almost monopolized by the treatment of cancer. As radium becomes more available and more widely used, the treatment of various benign conditions should receive proper attention and be perfected to the present standards of cancer therapy.

There are serious dangers attending the use of radium for benign conditions, and, as from overdoses of other useful drugs or physical agents, fatalities may result. The dosage for each disease cannot be standardized, each individual case demanding careful study; the factors of dosage must be formulated by knowledge

PYRETHRUM IN TREATMENT OF SCABIES—SWEITZER AND TEDDER

and experience. Fortunately, the fact that benign lesions are successfully treated by doses which are moderate when compared to the heavy doses required in treating cancer affords a liberal margin of safety.

Many types of benign disease and acute and chronic inflammatory processes are favorably influenced by radium therapy. Even if radium were not used at all in cancer therapy, the excellent results gained by careful treatment of benign menorrhagia, uterine fibroids, and hemangiomas alone would establish it as a valuable therapeutic agent.

Bibliography

1. Bowing, H. H., Fricke, R. E., and Desjardins, A. U.: Benign uterine hemorrhage: Its treatment with radium. *Am. Jour. Roentgenol. and Radium Therap.*, 29:497-510, (April) 1933.
2. Desjardins, A. U.: The specific radiosensitivity of lymphocytes—its significance in radiotherapy. *California and West. Med.*, 33:775-781, (Nov.) 1930.
3. Hiller, R. I.: Death following coagulation of the cervix. *Jour. Am. Med. Assn.*, 104:1323-1324, (April 13) 1935.
4. Medical news, general: Importations of radium. *Jour. Am. Med. Assn.*, 103:1161, (Oct. 13) 1934.
5. Rankin, F. W., and Palmer, B. M.: Postoperative parotiditis: Treatment without and with radium. *Am. Surg.*, 92:1007-1013, (Dec.) 1930.
6. Schmidt, W. H.: The treatment of cavernous angiomas covered with healthy skin. *Am. Jour. Roentgenol. and Radium Therap.*, 19:271-277, (March) 1928.
7. Stacy, Leda J.: The treatment of uterine fibromyomas. *Radiology*, 22:212-218, (Feb.) 1934.
8. Strauss, A.: Radium treatment and cavernous hemangiomas and of epulis. *Am. Jour. Roentgenol. and Radium Therap.*, 19:265-270, (March) 1928.

PYRETHRUM IN THE TREATMENT OF SCABIES*

S. E. SWEITZER, M.D., and J. W. TEDDER, M.D.

Minneapolis

THIS investigation was prompted because we thought there was a need for a clean, effective and economical treatment for scabies. The old treatments have the disadvantage of being malodorous and dirty, and frequently cause a subsequent dermatitis with all of its attendant inconveniences.

The ideal scabicide should kill the acari, destroy the eggs by penetrating the burrows, and not cause a dermatitis, and the added advantage of cleanliness, absence of unpleasant odor, and ease of administration would greatly enhance the value of the remedy. Pyrethrum was suggested to us as a possibility and we have experimented with it in the routine treatment of scabies. This we believe is the first clinical investigation in the United States in which an extract of pyrethrum flowers has been used as a scabicide. We have been unable to find any report of its previous use for this purpose in America.

During the past few years several French investigators^{1,2,3,4,5,6} have used pyrethrum externally in the treatment of scabies, and internally in the treatment of intestinal worms. Our investigation was concerned only with the external use of the drug. Pyrethrum has long been known as an insecticide, and the powder has been largely used for killing fleas (*pulex irritans*) and bed-

bugs (*cimex lectularius*). During the last decade spraying solutions containing pyrethrum have been extensively used for killing the domestic fly (*musca domestica*).

A perusal of the French literature^{1,2,3,4,5,6} indicates that pyrethrum quickly and readily kills the sarcoptic mite, and that it does not easily cause a dermatitis. This latter advantage, we believed, would justify its trial in a series of patients infected with scabies.

Pharmacology

Pyrethrum flowers having insecticidal value are obtained chiefly from *Pyrethrum cinerariaefolium* (*Chrysanthemum cinerariaefolium*) and other species of pyrethrum which are grown on a commercial scale in Japan and Dalmatia. The insecticidal properties of pyrethrum flowers are due to two active principles, known as Pyrethrin I and Pyrethrin II, which are present in a good grade of flowers to the extent of 0.9 per cent.

Chemically, these pyrethrins are esters of the ketone-alcohol pyrethrolone with two acids, chrysanthemum monocarboxylic acid and chrysanthemum dicarboxylic acid methyl ester. It is difficult to extract the active principles in a pure state and there seems to be no advantage in purifying them, for it is possible that the presence of oily, resinous, and waxy substances makes for a better preparation. The ointment consists of an absorbent fatty base in which is dissolved the extractive matter of pyrethrum

*From the Department of Dermatology and Syphilology, University of Minnesota, H. E. Michelson, M.D., Director, and the service of S. E. Sweitzer, M.D., Minneapolis General Hospital. Material for this investigation (Pyrethrum Ointment, Upsher Smith) was furnished through the courtesy of the Upsher Smith Company, Minneapolis.

PYRETHRUM IN TREATMENT OF SCABIES—SWEITZER AND TEDDER

flowers. It contains 0.75 per cent pyrethrins, hence, 100 gm. of the ointment used in this investigation represents 83 gm. of pyrethrum flowers.

We believe that an ointment of this strength need not have exfoliative qualities for it apparently readily penetrates the burrows and kills the eggs without the dangers of exfoliation.

Procedure

In our routine treatment of over 600 cases of scabies we have given the patients a four ounce jar of pyrethrinated ointment and a mimeographed copy of the following instructions:

It is essential that the treatment should be followed exactly as set forth to obtain relief. Omission, or shortening of the time given, of either of the parts of the treatment will accordingly delay relief.

Remove all clothing, and change bed clothes. All should be laundered before further use.

First night

1. Soak in a tub of hot water for twenty minutes.
2. Stand beside bath and soap yourself from head to toes, using any good soap, liquid preferred.
3. Re-enter bath, rinse off lather, and dry with a rough towel.
4. Apply ointment over entire body from neck to feet.

Second night

Apply ointment over entire body.

Third night

Repeat first night's bath and application of ointment. Report to clinic on next regular day.

In most cases it is necessary to continue the treatment for a period of from five to seven days, and in a few obstinate cases the use of the ointment was required for a longer time on resistant lesions.

Results

In 618 cases which were routinely treated with pyrethrum ointment, it was found necessary to repeat or continue the treatment into the second week on eighty-eight cases. In thirteen other patients Wilkinson's ointment was used after the first week, either because of complications (impetiginous lesions or staphylococcal infections), improper applications, or poor coöperation. In the remaining 517 cases the treatment was found to be perfectly satisfactory in from five to seven days. Inasmuch as the investigation was carried out in a free dispensary the coöperation of the patients was not always all that could be desired. Some of our unsatisfactory results could be at-

tributed to this difficulty. In the early part of this work we employed an ointment containing 0.5 per cent pyrethrins, but, as the observations continued, we found that by increasing the pyrethrum content of the ointment to 0.75 per cent pyrethrins fewer retreatments were necessary.

In only four cases did we encounter a suggestion of a sensitivity to pyrethrum. This diagnosis of contact dermatitis was confirmed by patch-testing with the ointment in only one case, the patch test being negative in the other three cases.

The *Journal of the American Medical Association*⁶ quotes several articles concerning allergy to pyrethrum. One patient reported by Sulzberger and Weinberg⁷ apparently showed a sensitivity to pyrethrum. Contrary to the general opinion that a large number of individuals are sensitive to pyrethrum, our investigation has not confirmed this belief. In all the cases that we have seen there is no evidence of toxic absorption from the ingredients in the ointment. Furthermore, a large local manufacturer of pyrethrum products informed us that he has not had a single case of dermatitis due to pyrethrum among his workers. In his grinding department, working forty hours a week, not less than four men handle the pyrethrum flowers constantly, and at least five other men are employed in that department in another capacity, where they come in close contact with pyrethrum. In his extracting department the process goes on continuously day and night, including Sundays, throughout the year, and employs eighteen men. Although these men come in close contact with the pyrethrum powder in charging the extractors, and also with the liquid extract of pyrethrum, no case of dermatitis has been encountered.

Conclusions

We have found pyrethrum ointment to be a valuable addition to the therapy of scabies. It is especially advantageous for use in private practice because of its cleanliness, pleasant odor, and freedom from irritation.

After the use of Wilkinson's ointment or sulfur ointment for scabies it is frequently necessary to use some bland ointment for several days following the treatment, in order to allay the sulfur dermatitis. In our series of 618 cases we encountered only four cases of dermatitis, which immediately disappeared on dis-

MEDICINE IN LITERATURE

continuing the therapy. In our occasional cases of severe generalized pustular scabies we found it necessary to hospitalize the patient and use Wilkinson's ointment, and, therefore, this type of case was not treated in our series.

In conclusion, we feel that our results corroborated the findings of the French investigators in this field. Pyrethrum ointment offers an effective, pleasant, economical agent for the treatment of patients with scabies and can be used without discomfort or loss of time from work.

Bibliography

1. Chevalier, J.: Le pyrethre (chrysanthème insecticide). Activité pharmacodynamique et thérapeutique. Bull. d. sc. Pharmacol., 37:154, (March) 1930.
2. Chevalier, J.: Le pyrethre. Ses préparations industrielles et pharmaceutiques. Évaluation de leur activité. Bull. d. sc. Pharmacol., 37:422, (July) 1930.
3. Chevalier, J.: Recherches pharmacologiques et thérapeutiques sur les pyréthrines. Bull. Soc. de thérap., 37:6, (Jan. 13) 1932.
4. Lemaire, A., et Gaudin, O.: Pyréthrins in the treatment of scabies. Bull. Sci. Pharmacol., 38:692-694, 1931.
5. Perrot, E. M.: Insecticides et vermicides; le pyrethre et ses applications. Bull. d. sc. Pharmacol., 39:42, (Jan.) 1932.
6. Querét and Minor Notes: Allergy to pyrethrum. Jour. Am. Med. Assn., 101:729, (Aug. 26) 1933.
7. Sulzberger, Marion B., and Weinberg, C. Berenda: Dermatitis due to insect powder. Jour. Am. Med. Assn., 95:111, (July 12) 1930.
8. Urbain, A., et Gulliot, G.: Sur les pyréthrines. Leur emploi en médecine vétérinaire. Rev. de path. Comp., 416: 493, (May) 1931.

MEDICINE IN LITERATURE

"There is no other education in humanity to compare with the doctor's life."

FRANCIS BRETT YOUNG.

Does medicine influence literature? Perhaps it will help to arrive at some sort of an answer to this if we examine the records and try to ascertain in what extent modern writers have arisen from a medical environment and then, possibly, a peep into their writings will tell us if the exposure to this atmosphere is reflected therein. It is a fascinating study and not a difficult one, for the material is ample and readily accessible. Of all the channels into which the minds of medical people have drifted and found anchorage, writing seems to have been the one in which they have revelled the most lavishly and achieved the greatest success. There is so much of it in evidence that we shall have to be careful to stay within safe limits because of the risk of wandering too far afield in this rich expanse.

A medical environment is created in several ways. A person may begin the study of medicine and stop before he has finished. Michael Arlen did this. Born in Bulgaria of Armenian parents he was sent to an English school and later studied medicine for three months in the University of Edinburgh. This appears to have been the extent of his medical venture, for he started writing in 1913 at the age of eighteen, struggling laboriously until 1924, when the publication and dramatization of *The Green Hat* made him famous and financially comfortable. He writes in the free, untrammeled style of the modernistic school, without evidence of any especial influence of his Scottish training in medicine. A. S. M. Hutchinson, best known for *If Winter Comes*, went somewhat farther but stopped equally abruptly. Born in India of English parents, he was sent to London to study medicine. Two years at St. Thomas's Hospital thoroughly disgusted him; he gave it up without a qualm and turned his full attention to the writing for which he had much the greater urge. Gertrude Stein studied psychology under William James and was a student in Johns Hopkins Medical School, specializing in the anatomy of the brain. This is as far as she went in medicine and whether or not there was any resultant effect on her very individualistic style of writing is very problematical. Indeed it is very questionable if in any of the three instances mentioned their more or less casual contact with medicine has affected their writings. They are mentioned in this connection only as a matter of general interest, that at least their footsteps touched the threshold of the third oldest profession in the world's history before they took up the art of writing.

Another type of medical environment is found in the

case of the children of physicians. Born in these circumstances were Owen Wister, Ernest Hemingway, Jacinto Benavente, Karel Čapek, Dale Collins, Sheila Kaye-Smith, Sinclair Lewis, Emil Ludwig, Julia Peterkin and Henrietta Richardson. Here the trail grows stronger; in the work of all of these writers can be found the impress of the childhood days. Owen Wister's clear insight into human nature and his skill in character delineation are well shown in his *Seven Ages of Washington*, in his little *Philosophy Four* and in *The Pentecost of Calamity*. His father was a physician in Philadelphia of a past generation, Wister being now 75. Hemingway used to ride around with his father, a general practitioner in Oak Park, Illinois, later in Michigan, and he brings many of his observations acquired in that way into his shorter writings. Jacinto Benavente's father was a well-known pediatrician in Madrid and the son became one of the greatest living dramatists in Spain. The influence of his father's life and work may be seen in the fact of the writer's great fondness for children, culminating in his organizing a children's theater a few years ago. Čapek is a Bohemian whose father, a country physician, encouraged him to study natural science. That he acquired a medical flair is shown by his play *The Makropoulis Secret*, a serio-comedy dealing in a fantastic way with the possibility of prolonging human life, really in opposition to his own expressed idea that "a short life is better for mankind, for a long life would deprive man of his optimism." Dale Collins, writer of adventurous sea stories, was born in Sydney, Australia, the son of an Irish ship's doctor who died when the boy was two years old. Sheila Kaye-Smith's father was Edward Kaye-Smith, M.R.C.S., L.R.C.P., practicing in a small seaport town, St. Leonards-on-the-Sea, England. A prolific writer of novels, the one bearing the most evidence of her early environment is *The Village Doctor*. Sinclair Lewis comes of a family of doctors. His father practiced in Sauk Center, Minnesota, and his maternal grandfather was a physician. His brother is a surgeon and he has an uncle who is a physician. *Arrowsmith*, published in 1925, was written with the help of Paul de Kruijff, who supplied many details of scientific technic, but the story and the construction were entirely due to Lewis. Emil Ludwig's father was an eminent ophthalmologist, Hermann Cohn, of Breslau, who gave his son the name of Emil Ludwig at birth "because he wished to spare him the difficulty of bearing a Jewish name in a country where feeling against the Jews runs high," a precaution which, by the way, was wholly wasted, since the son always delighted in publicizing his Semitic origin. Ludwig's chief importance as a writer of biography is characterized by a keen sense of character analysis, as in the case of Owen Wister, and therein may be conceded the value of his early training in an atmosphere of scientific

MEDICINE IN LITERATURE

medicine. It seems fair to assume that of all who have been named in this list, Ludwig shows the most direct effect of hereditary and environmental influence. Julia Peterkin's father was Dr. Julius Andrew Mood, practicing in Laurens County, South Carolina. She thoroughly understands the Negro mind and her stories, one of which gained her the Pulitzer Prize for 1928, are woven around character studies of that race. Henrietta Richardson was born in Melbourne, Australia, the eldest daughter of an English doctor named Lindsey Richardson. She has always written under the name of Henry Handel Richardson, feeling, as did the Brontë sisters when they first began writing, that they would receive more consideration with a masculine name. The Brontës were soon discovered and dropped their pen names, but Henry Handel Richardson, now the wife of a faculty member in London, continues as before. That she, too, received deep and lasting impressions from her early associations is shown by the plot which runs through her trilogy (*The Fortunes of Richard Mahony, The Way Home and Ultima Thule*) which concerns the life of an Irish doctor who goes to Australia and has a most hectic career associated with very accurately depicted mental deterioration.

We now come to the most interesting class of all: the professional writers who are also graduates in medicine. Here we find some very well known names: those of W. Somerset Maugham, Francis Brett Young, Warwick Deeping, A. J. Cronin and Havelock Ellis in the British group, Georges Duhamel, Léon Daudet and Louis-Ferdinand Céline among the French and William Carlos Williams and John Rathbone Oliver for the Americans. Maugham, most famous as a playwright but probably destined to be remembered best as a novelist, spent several years as a medical student in St. Thomas's Hospital in London and successfully passed the Conjoint Board for his M.R.C.S. and L.R.C.P. degrees but he never practised. "His days at St. Thomas's were responsible, however, for his first novel, *Liza of Lambeth* (1897). The hospital is on the edge of Lambeth, a slum district which many Londoners consider worse than the famous Limehouse section. To the young medical student the cases that came to his attention were more interesting pathologically and psychologically than medically. *Liza of Lambeth*, dealing with the life he witnessed in Lambeth, was a failure; it was still the Victorian era, and those who read the book were shocked, saying that its author had gone out of his way to libel slum conditions."^{*} He is supposed to have reproduced the first thirty years of his own life, including his entire medical experience, in the story of Philip Carey, the principal character in *Of Human Bondage*, except for certain non-essential details, possibly introduced for camouflage. Unlike Warwick Deeping, he did not use his medical training in his war service but was commissioned in the Intelligence Corps.

Francis Brett Young is the son of an English physician and himself studied medicine rather reluctantly at the University of Birmingham, for he felt himself much better fitted for a literary career than to try to follow in his father's professional footsteps. He began practice, however, in a small town in Devonshire, but continued to write and with some difficulty secured the publication of some of his efforts. Things dragged along this way until the outbreak of the World War. He was commissioned in the R.A.M.C. and was attached to an East African contingent. Invalided home, he was unable to resume practice or even to endure the English climate. He is a versatile writer and the quotation at the head of this article

indicates quite conclusively that he has entirely overcome his early aversion to the study of medicine as an adjunct to his literary life. *The Young Physician*, written by him and published in 1919, is still further evidence.

Warwick Deeping took his M.A. and M.B. degrees in 1902, studied in Middlesex Hospital and began practice while still continuing the writing which he had begun in his student days. His father and grandfather had been doctors before him and he himself appears to have had no dislike for the work, but the success which attended his early literary efforts caused him to give up the profession of medicine at the end of a year and devote his entire time to writing. When the war came along he secured a commission in the R.A.M.C. and saw active service in the Gallipoli campaign and in France. His literary work since the war has been of a much better quality than before and he admits freely a much larger outlook on life and a better insight into human qualities. His *Sorrell and Son* is a very human document but his *Roper's Row* has a much more distinctively medical flavor and bears some evidence of being, at least in part, autobiographical. His *Seven Men Came Back* is the post-war story of the life and fortunes of seven men who had served together in France, one of them the company medical officer, a most lovable character but unfortunately, to us, dubbed with the cognomen of "Doc."

Cronin is too recent an addition to the ranks to say much about. He was a busy general practitioner in Scotland when his *Hatter's Castle* came out and it was so quickly accepted by the public that he decided to abandon his profession as a doctor and substitute that of writing. Since then he has produced three or four more novels and a few short stories. His writing shows clearly the influence of his medical training and experience.

Havelock Ellis is in quite a different class from any of the foregoing, for all his writings for many years past have dealt with quasi-medical subjects. Born in 1859, the earlier years of his adult life were spent along very conventional lines, with full absorption of all the ideas of the mid- and later Victorian period, plus the influence of an heritage of trends from an ancestry of clergymen. Then he began to do some independent thinking, especially in the way of psychological analysis, and in order to establish himself with a sufficiently broad foundation in biology he prepared himself with a complete undergraduate medical education simply for the one purpose. He is today the foremost exponent of the scientific fundamentals of abnormal psychology as interpreted from a biological standpoint and, of course, it is superfluous to say that his medical knowledge was of paramount importance in shaping these ideas.

Georges Duhamel, Léon Daudet and Louis-Ferdinand Céline are modern French writers with medical degrees. Duhamel is said to be still in active practice although a fairly prolific writer. Louis-Ferdinand Céline is the pen name of a doctor named Destouches who is a hard-working practitioner in a suburb of Paris and is a quiet, retiring type who much dislikes publicity. His one production thus far: his *Journey to the End of the Night* is a massive thing, evidently the result of many a long period of labor in the difficult circumstances under which it must have been written. In form it resembles very closely a very prolonged example of what our psychiatric friends would call a "flight of ideas." Duhamel saw active service in the war and many of his shorter writings resemble excerpts, suitably elaborated, from an army surgeon's notebook. Daudet, of course, should inherit literary tendencies from his famous ancestor; in medicine he is known as a competent neurologist.

Neither of the American representatives chosen for this little study has abandoned his profession entirely
(Continued on Page 811)

*Living Authors, by an anonymous writer. New York: The H. W. Wilson Company, 1932. The writer of the present sketch acknowledges some biographical references from this useful book.

EDITORIAL

MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Published by the Association under the direction of its Editing and Publishing Committee

EDITING AND PUBLISHING COMMITTEE

J. T. CHRISTISON, Saint Paul C. B. WRIGHT, Minneapolis
E. M. HAMMES, Saint Paul T. A. PEPPARD, Minneapolis
WALTMAN WALTERS, Rochester

EDITORIAL STAFF

CARL B. DRAKE, Saint Paul, Editor
W. F. BRAASCH, Rochester, Assistant Editor
C. A. MCKINLAY, Minneapolis, Assistant Editor

Annual Subscription—\$3.00.

Single Copies—\$0.40

Foreign Subscriptions—\$3.50.

The right is reserved to reject material submitted for editorial or advertising columns. The Editing and Publishing Committee does not hold itself responsible for views expressed either in editorials or other articles when signed by the author.

Classified advertising—five cents a word; minimum charge, \$1.00. Remittance should accompany order.

Display advertising rates on request.

Address all communications to Minnesota Medicine, 2642 University Avenue, Saint Paul, or 324 Fourth Avenue South, Minneapolis. Telephones: Nestor 1381 and Dupont 1013.

BUSINESS MANAGER
J. R. BRUCE, Saint Paul

Volume 18

DECEMBER, 1935

Number 12

Socialization of Medicine

The subject of State Medicine is receiving much attention at present. The main reason why the subject deserves serious consideration is the fact that it has been established in several foreign countries and there is good reason to suppose that our country may follow suit. On the other hand the experiences of foreign countries afford good examples of how State Medicine, which is a socialistic affair, works in practice. Study of foreign experience shows conclusively that as a result of State Medicine morbidity and mortality from disease are not decreased, preventive medicine is not furthered, loss of time due to sickness has been increased, and the physician's time is much taken up with trivial complaints and routine paper work. While it has been stated that the average physician does not suffer financially, the spur to scientific improvement is lost to the physician just as personal initiative is so likely to be lost in governmental

employment. It is the quality of medical service as now furnished in private practice that will suffer.

If it is advisable to socialize medical practice, why not socialize the other professions and the butcher, the baker, the candlestick maker? When we realize that even now the average American family spends more for automobiles, tobacco, cosmetics, radios and musical instruments than for doctors' fees, arguments for singling out medical care lose their force. Socialism has never been and is not now popular in the United States and neither is the socialization of medicine. There is much evidence that the average American citizen is most particular in having the physician of his choice. As a rule a patient will consent to patronize a free city hospital only from dire necessity.

The agitation for State Medicine does not come from the rank and file of the American public as typified by the labor unions or white collar workers, but from organized groups with State Medicine as their objective. In this connection it was interesting to read of the reactions of Mr. Edward A. Filene, one of the organizers of the Twentieth Century Fund and one keen for the socialization of medicine, who recently contracted pneumonia while on a visit to Russia. All the facilities of the Kremlin were put at his disposal, but the gentleman was not satisfied with socialized Russian medicine and insisted on wiring Professor Fritz Meyer of Berlin to come to his aid by aeroplane. Theoretically socialized medicine suited him, but it seems the irony of fate that in the practical test socialized medicine was lacking as far as he personally was concerned.

The high schools in Minnesota and elsewhere are debating the resolution that the states provide complete medical service. It is said that there is difficulty in getting debaters for the affirmative, which if true is significant.

What is to be done about the present agitation for State Medicine? The profession should be unanimously opposed to the proposition. The American Medical Association officers have been very active in disseminating information on the

EDITORIAL

subject. Millions of pamphlets have been printed and distributed, syndicated newspaper articles and the radio have been utilized and three debate handbooks have been prepared for high school debates. The state journals are full of information on the subject.

Articles may or may not be read. For that reason the spoken word is often of more value. We often speak of the American Medical Association in the third person and forget that the county medical society members are the American Medical Association and express their wishes through their delegates at whose direction the officers act. What a medium for opposition to State Medicine lies in the 100,000 members of our county societies! There is a potential duplication of this strength in the Woman's Auxiliary membership. A grateful patient should be an easy convert. Someone recently rather facetiously remarked that the obstetricians occupied a strategic position.

Members should read the material on medical economics appearing in medical journals and do their part.

Bone Marrow Biopsy

The appreciation that hematology is actually a study of the peripheral manifestations of the blood-forming mechanism has led to an investigation of the bone marrow. Although biopsy of the bone marrow has been performed occasionally, only recently has simplified technic of trephining the sternum made the direct examination of the bone marrow a practical procedure in diagnosing obscure blood diseases.

Dameshek* has recently reported his experience in some 125 clinical cases. Under local anesthesia, incision is made over the sternum and with a small hand trephine a bone plug is removed and smears made of the marrow. Smears stained with Wright's or Giemsa's stain preferably are submitted to differential counts. Needless to say, it requires a hematologist of considerable experience to differentiate the cells.

Study of bone marrow smears in perfectly normal individuals was not made in Dameshek's series. The nearest approach to normal smears

was made in autopsy material obtained soon after death. This enabled some estimation of the normal picture and the normal relation of early red and white cells.

Although the procedure was used at first in cases of blood disturbance in which the diagnosis was not in doubt, now it is used only in doubtful cases. In some twenty-six such cases it has resulted in twenty accurate diagnoses not possible through usual clinical methods. It failed in establishing the diagnosis in the six remaining cases.

Some of the observations of the author are worthy of note. The marrow was found hyperplastic in cases of myelogenous leukemia, both when the white blood cell count was increased and when it was normal or diminished. His experience warranted the conclusion that in the majority of cases of leukemia there is a normal or low white cell count. Cases of leukemia not possible of diagnosis from the blood picture alone were identified.

In the case of pernicious anemia he found that while the bone marrow was hyperplastic and contained large numbers of embryonic red cells, the percentage of normal nucleated red cells was diminished. After liver therapy the normoblasts predominated and the megaloblasts were rare. In this disease, something interferes with the normal maturing of the early red cells.

Perhaps the most interesting observation was in cases of Hodgkin's disease. Here there was an increase in the leukopoietic elements in a hyperplastic bone marrow with a marked increase in the immature leukocytes. This seems to confirm his belief that the disease belongs in the group of diseases of the blood-forming organs.

Most of the cases of Banti's disease seen by the author have been misdiagnosed and have proved to be aleukemic leukemia. In one case examined, which was clinically Banti's disease, there was an increase in the white blood cell-forming elements of the bone marrow, but the diagnosis still remained in doubt.

This author's study of the bone marrow confirms the conception that in both myelogenous and lymphatic leukemia the overgrowth of primitive, more or less rapidly growing cells which invade the blood-forming tissue chokes the red, white and platelet formation in the marrow.

Apparently a valuable addition has been made in the diagnostic field of obscure blood diseases.

*Dameshek, W.: Biopsy of the sternal bone marrow. Am. Jour. Med. Sci., 190:617, (Nov.) 1935.

Council on Pharmacy and Chemistry

Prior to the establishment of the Council on Pharmacy and Chemistry of the American Medical Association, in 1905, there was no way for American physicians to ascertain the value of new therapeutic remedies aside from their use clinically. While clinical experience in the use of remedies is a valuable test, this must be supplemented by accurate knowledge of the chemical composition of any preparation.

Before 1905, medical journals had no way of verifying the claims of advertisers and it is not surprising that even the *American Medical Association Journal* accepted advertising which in the light of present knowledge and ethics is not considered acceptable by American medical journals.

Foreign countries, even England, have been very backward in this matter of reliable medical advertising. It is surprising to find in some of the best British journals, advertisements which would not be carried in our journals. Recently several inquiries have been received by the Council from foreign medical journals, indicating that they are commencing to see the light.

Today all the state medical journals, except the *Illinois State Medical Journal*, restrict their advertising of therapeutic remedies to those approved by the Council. Physicians throughout the country may, therefore, place their confidence in the advertising columns of the state journals — Illinois excepted.

Few physicians appreciate the enormous amount of investigation carried on by the Council. Made up of chemists, pharmacologists and professors of medicine, who serve without compensation, and assisted by numerous consultants, the central office in Chicago investigates hundreds of remedies yearly, qualitatively and quantitatively, and relative to therapeutic applicability. Recently infections were reported following the use of a remedy nationally used. Through the investigation of the Council, which showed serious contamination of the product, the manufacturer was only too willing to take his product off the market. Such a check on the manufacturers tends to prevent laxity on their part.

A few years ago it was thought desirable for the American Medical Association to establish a Committee on Foods in an effort to bring some order out of the chaos which existed in the sell-

ing and advertising of foods. The absurd claims made by food sellers as to the health producing qualities of their wares made this step seem advisable. The way food merchants rushed to obtain the approval of the official committee of the physicians of the country has been rather complimentary to the profession. The desire for the approval of the Committee on Foods acts as a brake on extravagant claims for health producing qualities of advertised foods and assures the purchaser of the purity of the product.

The Council has its troubles. When a man's pocketbook is threatened he will sometimes go to most absurd lengths. The case of Ambruster is an example. In an effort to have all but Spanish ergot, in which he was financially interested, declared unfit for medical use, he has for several years been accusing the Council and even the United States Department of Agriculture of conspiracy to approve substandard drugs. That he was able to go so far as to gain the sympathy and support of at least one physician and one United States Senator and to carry the matter as far as a Senate committee investigation must have made him a thorn in the flesh to the Council. Incidentally, as reported in the *American Medical Association Journal*, the medical profession need not hesitate to use ergot preparations approved by the Council.

The physicians of the United States have established the Council on Pharmacy and Chemistry for their own protection and ultimately in the interest of their patients. That a certain number of physicians ignore the Council's existence, directly or indirectly, must be due to ignorance.

Interferin

Interferin (manufactured by the Keefer Laboratories, Chicago), "the first American-made abortive paste," is said to be ". . . an oil and fat-free base containing iodine and iodine compounds, several astringents and antisepsics." A report by the Bureau of Investigation on Abortifacient Pastes (*The Journal A. M. A.*, June 11, 1932, p. 2155) noted that a similar preparation, Provocol (sold in this country as Leunbach Paste), contained olive oil, cacao butter, potassium hydroxide, sodium hydroxide, iodine, potassium iodide, tincture of benzoin, tincture of myrrh, thymol and water; also, that Interruptin (another similar product) was a soft paste containing iodine, thymol, camphor and the "active principles" of crocus, rosemary, eucalyptus, myrrh, "etc." In a short period the use of abortifacient pastes by German physicians resulted in twenty-five deaths, two of which occurred a few minutes after the injection. Since Interferin contains iodine and other ingredients similar to those in Interruptin and Provocol, there would appear to be an equal danger in its use. The firm cites no bibliography in the Interferin folder. (J. A. M. A., Oct. 12, 1935, p. 1210.)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
J. A. Moga, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

What Can I Do For My County And State Medical Society?

Suggestion Number Three

1. Inform yourself on the provisions made for public health work by the Social Security Act. (A very brief summary is printed this month in these columns. For the complete text of the Act write the State Office, 11 W. Summit Ave., St. Paul.)

2. Coöperation and guidance of the practicing physician is specifically asked for by health authorities for planning and putting into effect the provisions of this act.

3. Each county and district medical society should have an active, functioning public health or contact or executive committee (it makes very little difference what name is applied). This committee should guide and actively assist in all public health work in the community. If such a group is functioning in every locality great public good may come out of New Deal expenditures for public health. If it is not functioning in every locality when the wheels begin to move, quality of the health service provided and medical standards too will suffer.

4. Inquire into the situation in your community.

5. Have you an active public health committee in your society? IF NOT, APPPOINT ONE!

Be prepared in YOUR SOCIETY to guide local medical aspects of the New Deal program for Public Health.

What has your society done to meet the problems in medical care for the indigent which the withdrawal of direct Federal aid has brought to a head in many parts of the State?

Have you studied the situation in your county to find out whether a re-organization of method in handling the tremendous problem of the sick poor might help?

Has your Committee of Three been in constant contact with local officials to assist them in their task and, at the same time, secure proper

recognition of the right of physicians to remuneration for their work?

These are important matters. Your own future is at stake—and the future of medicine in the United States. Only the vigorous, intelligent and fair minded coöperation of the physician in the affairs of his own local community will save the private practice of medicine in America from dictation and disrepute.

Getting Ready to Hunt Illness

Enumerators for the "Doorbell Health Survey" are going to school these days under the tutorship of Frederick Russell Clark, director in Minneapolis, and R. H. Everts, director in St. Paul, as this issue goes to press.

The course of study includes intensive drilling on the complicated questionnaire and forms that must be filled out from door to door; also the proper approach to the householder to get him to tell all about his family's illnesses.

Training for the enumerators who are to work in Willmar, Winona and a range town, possibly Chisholm, is being carried on by representatives of Mr. K. E. Setre, state supervisor, representing the United States Public Health Service in charge of the Survey.

All From Relief Rolls

All of the enumerators have come from the relief rolls because this health survey is made possible by a special grant of WPA funds and its economic objective, at least, is the employment of a special class of "white collar workers" who are otherwise difficult to fit into the WPA picture.

The United States Public Health Service is, at the same time, making a serious effort to get reliable statistics on the amount of disease in the districts and states selected and its relation to

MEDICAL ECONOMICS

medical services, according to Dr. A. W. Hedrich of Johns Hopkins, who is director for this Great Lakes region and who was quoted in these columns last month.

Householder's Permission May be Asked

Details as to the exact form medical coöperation with the survey is to take are still somewhat unsettled. As the plan now stands doctors will be asked to verify the statements secured at the door as regards diagnosis of disease and will be paid the customary fee of 25 cents each for such verifications.

The householder or housewife will be asked by the enumerator for her permission to check the matter with her physician. If permission is granted the word "confirmed" or "not confirmed" as the case may be will be noted on the questionnaire.

The enumerator himself will take a pledge to keep in confidence all information received before he starts his task.

All information will be edited and filed in Detroit and Washington and arrangements will doubtless be made, according to Dr. Hedrich, to separate the name of the individual enumerated from the statistics obtained.

"Impatient Facts"

Apropos of the Survey, here is a paragraph from the opening editorial from the November *Survey Graphic*. The editorial is entitled "People Like Ourselves," Forecast for *Survey Graphic*, by Paul Kellogg.

"For nearly ten years," says Mr. Kellogg, "*Survey Graphic* has followed as probably no other general magazine, one field of sharp controversy in which the consumer's stake is urgent—our need and use of medical services. Each year more experiments in both group practice and group payment go forward with the backing of progressive physicians and laymen. The five-year study of the Committee on Costs of Medical Care is now followed by the vast national inventory of chronic illness and disability which has been entered upon by the United States Public Health Service with benefit of WPA funds. It will add to THE IMPATIENT BODY OF FACTS on which we can, if we will, base sound efforts to break down the wall of cost between doctor and patient. As things stand, of the haz-

ards originally blocked out by the President's Committee on Economic Security, sickness remains for report and action."

Representing the Social Worker

Mr. Kellogg well represents the attitude of the typical social service worker and of the philanthropic foundations which back the *Survey Graphic*.

They may be counted upon to invest any body of facts collected in the "Doorbell Survey" with an urgency and a color to match their own ambitions.

Really "progressive physicians and laymen," however, are assembling a stubbornly resistant body of facts which call for quite different conclusions and courses of action and supplementing it with experiments of a different character. It is obvious that such study and experiment on the part of the organized medical profession was never so important as now.

New Prospects For Public Health in Minnesota

What can Minnesota hope to get out of the public health appropriations that will be available—provided Congress appropriates the money—under the terms of the President's Social Security Act?

Representatives of the United States Public Health Service, the Children's Bureau, the American Medical Association, the State Board of Health, the Council of the Minnesota State Medical Association held an important conference to discuss that question Sunday, November 24, in St. Paul.

The question assumes an especial importance on the eve of the special session of the Legislature called specifically to determine Minnesota's participation in the new social security program.

Provided by the Social Security Act

Briefly, the Act as passed by the 1935 Congress authorized appropriation of a fund of some \$8,000,000 to be distributed mainly on a matching dollar for dollar basis to the states for the extension of public health work under the central supervision of the United States Public Health Service; also a fund amounting to a total of \$8,150,000 for extension of maternal and child welfare services, of services for crippled

MEDICAL ECONOMICS

children and of child welfare services. This latter fund is to be centrally administered by the Children's Bureau under the supervision of the Secretary of Labor and part of this money also is to be "matched money."

Both are designed to reach the rural district, with public health services.

Minnesota's Share

If Congress, at its next session, appropriates the money authorized under this act, then Minnesota will be entitled, as things stand now, to an additional appropriation of approximately \$93,000 for public health projects. This estimate is derived by matching existing appropriations for public health (a part of the federal moneys may be matched that way) and adding thereto the portion of the Equalization fund to which Minnesota, on a basis of population, is entitled, also a small sum for special health needs (matched money) and the flat sum allowed each state to aid in training personnel to carry out the new health projects.

A considerably larger sum might be secured for the state if the Legislature should appropriate any new funds this year. This latter part of the appropriation is available up to \$47,865 only if it is matched by new state appropriations made since Jan. 1, 1935.

For Maternal Care

In addition to the above appropriations a special sum can be made available for maternal and child welfare, for crippled children and for child welfare to be administered under separate auspices and with authorization of the Children's Bureau and the Secretary of Labor in Washington. This appropriation will amount to \$57,946 in Minnesota. Of this amount, \$22,000 must be matched by existing appropriations for this purpose and officials estimate that Minnesota will be eligible to utilize the full amount, using appropriations made for public health nursing in the state for the necessary matching funds.

Doctors are Interested

As the principal agents in the extension of health and preventive medicine, doctors are interested in this program.

Special points of immediate concern are:

1. The \$93,000 (approximate) that is to be made available under authorization of the United States Public Health Service can be used ONLY

in districts that are under supervision of a full time health officer with adequate stipulated assistance.

Thus a powerful impetus is given from Washington for the organization in rural districts all over this country of the so-called "county health unit." Ideally this county health unit includes a full time health officer, two nurses, clerical help and a sanitary engineer. The number of counties thus organized in the entire country is comparatively very small and they occur in the East and South where the population is much denser than in the Middle West and where, as in Alabama, there are unique health problems.

Most of the Minnesota men agreed that the typical health unit would be impractical and unnecessary in rural Minnesota.

Minnesota Plans

It is the tentative plan of Dr. A. J. Chesley, State Health Officer, to organize, as a beginning, three district health units each of which is to include more than one county and each of which embraces different types of public health problems. These are to be in the nature of laboratory experiments in county or district health organization. The three full time health officers who will be in charge will probably be deputies of the state health officer and their jurisdictions sufficiently flexible to fulfill the letter of the requirements of the United States Public Health Service.

Requirements for Health Officers

2. To carry on the program for which the funds are to be appropriated a trained personnel is necessary. This personnel is not available at the present time and the representatives from Washington regard their training as the most urgent immediate need in laying the groundwork.

To qualify for the work of full time health officer a man must be not more than thirty-five years old. He must be a graduate of a Class A medical school. He must have at least a year of clinical training including preferably three months of training in pediatrics and three months in infectious diseases.

In addition these candidates must have special public health training. In the emergency, a course of three months is now prescribed with the understanding that these same trainees will

MEDICAL ECONOMICS

later put in nine more months to receive a full year of work that carries with it a certificate in Public Health. Training centers for these candidates are inadequate according to the United States Public Health Service representatives. They will doubtless be increased as the program develops and there is a possibility that the University, with its unique teaching facilities in parasitology, biometry, bacteriology and with the State Board of Health as an integral part of the school, may offer itself and be accepted.

Maintenance payments are given to the trainees out of the special fund provided for the period of this special training.

Children's Bureau Funds

The \$57,946 that may possibly be available through the Children's Bureau and the Secretary of Labor are to be spent as follows, according to the plan outlined at the meeting:

1. For education. This will take the form principally of "refresher courses" for physicians by which education in pediatrics and obstetrics will be brought to the local physician through the State Board of Health, the State Medical Association or the Children's Bureau.
2. For training of public health nurses.
3. For classes for parents and school children in nutrition, mental hygiene and dental hygiene.
4. For institutes in health education, laying out courses of training, etc.
5. For health conferences.
6. For pre-natal classes or clinics.
7. For a maternal delivery service—that is, for trained assistance that will be available at the call of the local physician.
8. For a full time dentist, possibly, to be nominated by the state dental society to be used in the schools.

"We're Discharging a Well Recognized Obligation"—Dr. Miller

Said Dr. K. E. Miller of Washington, in charge for the United States Public Health Service of District No. 3 (of which Minnesota is part):

"We cannot reach the farms and villages from any central headquarters.

"It is only logical, therefore, to take Public Health to the people. It is, in fact, a responsibility of the state and federal government to see that adequate health facilities are provided for the people in the remote districts as well as in the cities. Title Six, section one, of

the Social Security Act merely provides a means for the government to discharge this well recognized obligation.

"In any such program a central head is necessary, if only to protect the individual state agencies from the politicians and job seekers. Actually, however, the whole problem is in the hands of state and territorial health officers with the Public Health Service acting only as agent for these officers.

No Need to Rush

"One feature of these new appropriations should be noted especially. If there is a balance at the end of the first fiscal year it can be carried over and used another year. There is no need to rush into the field immediately with a full-grown local health service."

There is apparently no doubt in the mind of Dr. Miller as to the value and need everywhere of the local county or district health unit.

It was Dr. Miller's contention that wherever these full time health units have been established, they have never been abandoned because popular demand has made it impossible to abandon them.

He cited, especially, Alabama's county health units, all of which are identical so far as control is concerned with the county medical societies of Alabama.

"The county health officer in no way infringes upon the practice of the private practitioner. He is, in fact, the best possible advertiser of the services of the doctor. He persuades people of the value of preventive medicine when they are well, sends them to the doctor when they are sick."

"This is Not an Emergency Program"—Dr. McCown

Said Dr. Albert McCown, director of the Maternal and Child Health Division, United States Children's Bureau:

"The success of the Social Security Act will depend upon the understanding and co-operation of all.

"The program financed by the funds for maternal and child welfare and for crippled children will not be centrally dictated. We cannot, as Woodrow Wilson said, hear the voice of America in Washington.

"We must leave the real responsibility with the physicians in the local community.

"It will be the business of the state health department to decide just what agencies will administer the separate funds in each state, but these agencies must have the help of the medical, nursing and dental professions.

"Also they must have a well developed plan. This is not an emergency program and it is highly inadvisable to take any of this money until they are really ready to participate."

High Quality of Service Our Objective— Dr. Leland

Said Dr. R. G. Leland, Chicago, director of the Bureau of Medical Economics of the American Medical Association, speaking later before a meeting of the Council:

"These are the essential functions of a public health department:

1. To control communicable diseases
2. To collect vital statistics
3. To control the environment (as to sanitation, etc.)
4. To conduct public health education.

"As a profession, we believe in public health. We initiated the special public health department. We have always supported public health.

"Our objective, however, is not to spend money but to make sure of necessary services and to make sure, also, that these services are of a high quality.

We Must Assist

"The Social Security Act is not a matter for debate; it is a fact. We as a profession, believing as we do in public health, must assist in carrying out its aims to the limit of our ability. That assistance, following our objectives, should take the form of closer coöperation in the future between organized medicine and the administrators of public health.

"The passage of this act is a phase and sign of a great social change. It carries with it the hope of great benefit. It is our responsibility to see, if possible, that benefit is secured. We must lend a hand to all sane programs. We must confer freely and frankly with the state health agencies concerned. The delay in appropriations has given us a chance to think the thing through. We must help to make really constructive plans."

"Our Machinery Must be Ready to Function"— Dr. Bauer

Said Dr. W. W. Bauer, Chicago, director of the Bureau of Public Health and Instruction of the American Medical Association, speaking at the same council meeting:

"In the quack and faddist literature there is one significant note: it is that public health administrations are working hand and glove with the medical profession. Where that coöperation is closest the 'lunatic fringe' of medicine has the smallest chance to survive.

"Therein lies another suggestion to us that the health officer and the medical profession ought to be the closest of friends.

"Our objectives are the same. The patient of the physician and the client of the health official are one and the same person. In fact, it's all one problem of

many phases and where there has been no health service the medical profession has been the first to demand such a service. When official inefficiency creeps in, the medical profession should be the first to demand a change.

"County medical society backing is the very best protection and backing for the public health department. Lacking that backing and protection, political influences creep in and the physician suffers.

"Every stimulus should be given to prompt the medical profession to help the health work in remote districts.

"Most of the work to be financed by these new appropriations will be done in your own local communities among your own people.

"The first step for us to take in guiding the new program is to urge, by every possible means, the formation of an active public health committee in every county.

"If we build that way we shall be ready to meet any emergency. Our machinery should be well oiled and ready to function."

Is the General Practitioner Delinquent?

The earnest desire of public health officials to secure the interest and coöperation of the medical profession was very evident at this meeting.

That this is a commendable spirit and that physicians, by the same token, should go more than half way to meet it goes without saying.

At the same time, physicians will not be persuaded, even in the interests of a very desirable coöperation, to sacrifice any vital principles of medical practice in so doing.

Nor are they wholly convinced of the urgent need for any elaborate new organization in Minnesota, for the improvement of public health.

Is the general practitioner, here, delinquent in the matter of the health education and protection of his patient? If so, would not the development of a system be desirable which would utilize the services of the practitioner and the county medical society rather than numerous full time health officers?

Elaborate Machinery

That the money authorized in the Social Security Act for the new program will not begin to cover its actual cost as it finally gets under way is obvious.

These appropriations merely lay the foundation for what may eventually become a very elaborate machinery composed of district, sub-

MEDICAL ECONOMICS

district and local administrators; of clerks, nurses, dental staffs; of pharmacists and engineers.

For the present, however, organized medicine, vitally concerned in the improvement of public health, will welcome an intimately controlled cooperation with the Public Health Service.

Minnesota's Own Handbook For Debaters

The debate handbook prepared by the Minnesota State Medical Association is now on the press and should be ready to distribute to Minnesota debaters, debate coaches and interested members within a few days.

This handbook is unique among the pamphlets and publications that have been hastily assembled on all sides to assist in debating the 1935 high school question:

Resolved: that the several states should enact legislation providing for a system of complete medical service available to all citizens at public expense.

For Easy Reading

It provides the only collection of excerpts and quotations from papers and speeches by men of note in Minnesota that is available anywhere for the debaters—together with other significant selections from personages of national fame.

Also these excerpts and quotations have been assembled with arresting titles and sub-titles and with plentiful use of variety in type and make-up so as to make the going as easy as possible for young students.

Every debate coach should have an opportunity to examine this special Minnesota handbook and distribute it to his debaters.

Available at State Headquarters

As noted before in these columns, the study material available to these students through the routine channels is incomplete and, for the most part, heavily loaded for the affirmative.

The state association, by means of this handbook and other material available at headquarters, 11 W. Summit Avenue, St. Paul, has done what it could to help balance the odds.

To Talk Matters Over

It is now the responsibility of each individual member in every community where high schools have entered the contest to see that coach and teams are supplied; also to see that the young debaters have an opportunity to talk matters over personally with at least one trusted, friendly physician.

It has been suggested that a Sunday night supper at the home of one of the physicians with the debaters as guests is a happy means of getting acquainted with the students and giving them whatever assistance they may require.

Auxiliary Will Help

In any such contact, as in many other ways depending upon the community, the Women's Auxiliary, whose Board recently agreed officially to help the physicians in any way possible, can be of great assistance.

Following is the list of schools that have filed with Mr. O. E. Smith, director of the High School League, to enter the competition.

Region Number I (5 Schools)

Elgin	Stewartville
Rochester	Winona
Spring Valley	

Region Number II (9 Schools)

Fulda	Round Lake
Jackson	Wells
Luverne	Windom
Mankato	Worthington
Pipistone	

Region Number III (8 Schools)

Canby	New Ulm
Clara City	Sleepy Eye
Ivanhoe	Winthrop
Madison	Wood Lake

Region Number IV (8 Schools)

Cambridge	Randolph
Elk River	So. St. Paul
Mora	Stillwater
No. St. Paul	White Bear Lake

Region Number V (16 Schools)

Albany	Excelsior
Atwater	Holdingford
Belgrade	Litchfield
Bloomington	Mpls. North
Chaska	Mpls. Roosevelt
Cokato	Mpls. West
Dassel	University H. S.
Deephaven	Willmar

Region Number VI (14 Schools)

Alberta	Glyndon
Alexandria	Moorehead
Barnerville	Moorehead T.C.H.S.
Cyrus	Pelican Rapids
Fergus Falls	Perham
Frazee	Pine River
Graceville	Wheaton

Region Number VII (20 Schools)

Aurora	Ely
Big Fork	Eveleth
Brook Park	Grand Rapids
Chisholm	Hinckley
Cloquet	International Falls
Coleraine	Proctor
Cromwell	Rush City
Deer River	Sandstone
Duluth Central	Virginia
Duluth Denfeld	Willow River

Region Number VIII (13 Schools)	
Badger	Okee
Crookston	Red Lake Falls
Hallock	Roseau
Hendrum	Thief River Falls
Karlstad	Twin Valley
Kennedy	Warren
Mahnomen	Total Number—93

Talks by Physicians

Dr. W. F. Braasch, Rochester, chairman of the Committee on Medical Economics of the association, addressed the students of the Rochester high school on the state medicine and the debate question Tuesday, November 19. It is to be hoped that arrangements will be made in all of the above communities for similar talks by local medical men. As suggested last month, a little time can undoubtedly be secured at the conclusion of the debates. Every society should be represented without fail at that time.

Requests for medical speakers on the subject to talk before luncheon clubs and other adult groups are frequent these days, also. For the assistance of such speakers who might otherwise refuse to take advantage of the opportunity for lack of time to prepare themselves, a complete talk has been prepared at the state office and is available to any member who asks for it. *This talk requires about thirty minutes to deliver in full, and may be cut to suit the time allotted. Members are urged to send for it and be ready whenever the occasion arises.*

Who is to Vaccinate—and Where?

Where and by what methods are the school children to be vaccinated against smallpox and immunized against diphtheria?

This question is a perennial source of discussion and difference of opinion among physicians, health workers and school authorities.

The answer most often given by the medical profession is that all such measures should be carried out in the doctor's office and, preferably, by the family doctor.

That this is the ideal solution admits of no question. At the same time, a mere statement of principle in this matter on the part of physicians will not, in most cases, bring in a sufficient number of children to provide adequate protection for the school or to satisfy either the physicians, themselves, or the school and health authorities.

Physicians Must Lead

The welfare of the children and, incidentally, the good repute of the profession, demands that physicians take a lead in seeing that the children in the schools, ALL OF THEM—have the benefit of these simple routine and universally accepted disease preventives.

If the physicians prefer to do the work in their offices—and most of them do—then they must see that every arrangement is made and every possible effort exerted to see that all the children get to their offices.

This is a definite social and professional obligation. Routine vaccination and immunization of school children will be done by somebody—if not by the doctors of the community acting together, then by some other agency. When the doctors allow the school authorities or social welfare agencies to do the job for them, they provide heavy ammunition for the lay critics of medicine.

When they undertake to do the job themselves and then make only a hasty, half-hearted effort, they simply add to the chorus of complaint—and with some justification.

The medical profession is under fire today as never before. A multiplicity of surveys and inquiries into the extent of disease is being made today and also into the extent and adequacy of medical facilities and the fitness for the task of the general practitioner and the family physician to distribute the benefits of modern preventive medicine to all.

Failures to lead in the vaccination and immunization of school children will be seized upon and magnified without fail by proponents of Social Medicine.

Opportunity

The job of immunization and vaccination of school children belongs logically to the county medical society. It is the job of the medical society to decide upon the method and then, having decided, to carry that method through to the satisfaction of every agency concerned.

Here is an opportunity to show the practical value of organized medicine to the community. It is also an opportunity, in case of indifference or failure on the part of the physicians, to chalk up another charge, however unjustly, against our system of medical care.

It is worthy of note that the questionnaire to be filled out for the Chronic Disease Survey of

MEDICAL ECONOMICS

the United States Public Health Service includes several pertinent questions about vaccination and immunization. If nothing has been done on a large scale in your community to immunize and vaccinate the children, that fact will not go unnoticed by eager observers of the results.

For Orderly Progress

There is to be no haphazard experimentation with new methods of care for the indigent or for low income groups in Wisconsin.

Anticipating the acute problems that are sure to present themselves to physicians everywhere as a result of the withdrawal of direct federal relief and the insufficiency of WPA wages for payment of medical care, also the abortive and uncontrolled experiments in the distribution of care that are likely to result from the propaganda for sickness insurance, the Wisconsin State Medical Society is now fully armed and legally qualified to supervise, control and coördinate all such undertakings. Thus progress in Wisconsin will proceed from now on in "orderly fashion."

This was the keynote of an important paper read by Mr. George Crownhart, executive secretary of the Wisconsin society, at the recent conference of secretaries of the American Medical Association in Chicago.

The paper covered substantially the same ground as the report from its Committee on Medical Economics which was reviewed in these columns a month ago. It will be printed soon in the Bulletin of the American Medical Association and should be read there in full.

Groundwork Is Laid In Wisconsin

In the meantime, it is worthy of note once more that Wisconsin has laid the complete groundwork for the solution of all of its medical economic problems. And it is the first state to do so.

Beginning with an amendment to its charter which specifically empowers its county units to enter into contract with county authorities for care of the sick poor WITH THE APPROVAL OF THE STATE SOCIETY, it has cleared the way for medical care for the indigent by the contract plan wherever that seems necessary. At the same time, it has provided for assistance in supplying contracts and advice by the state society. It has also approved, for appropriate urban and semi-urban communities, plans for spe-

cial credit arrangements in low income groups. These, also, will require the approval of the state society and the state society is empowered by its House of Delegates to employ investigators to assist in establishing such plans.

For Other Patients

For other classes of patients who do not fit into either of these groups but who sometimes find medical bills difficult to pay, the state society is ready to equip each member with cards to be hung in their offices and with special credit blanks, all of which are to make it very clear to the patient that his own doctor is ready and willing to serve him at fees which he can pay; that his doctor will gladly sit down and work out a plan with him whereby he can secure and pay for all necessary care without recourse to charity clinics or to the embarrassment of bills he cannot pay.

When organized medicine everywhere takes stock of the needs of all the people, makes a rational provision to meet those needs and presents it to the public in the orderly fashion of the Wisconsin society, demands for radical reform in the Legislature will fall on deaf ears.

Washington's Plan

Among a large number of experiments in the delivery of medical service now under way under county medical society management in the United States, none is more interesting or more promising than the District of Columbia plan.

Dr. Wallace M. Yater, chairman of the Committee on Coördination of Resources for Medical Care for the Medical Society of the District of Columbia, is largely responsible for this plan. In the work of organization he has had the assistance of Mr. Ross Garrett, Health Secretary of the Council of Social Agencies of Washington, D. C. Dr. Yater and Mr. Garrett both attended the Chicago conference of secretaries and, incidentally, they may be available within the next few months to explain their organization and objectives to county medical societies in this quarter.

One Central Bureau

The distinguishing mark of the Washington plan is that it coördinates all of the medical resources of the community.

MEDICAL ECONOMICS

Thus every patient who applies for medical care in Washington—except those for whom payment of medical and hospital bills is no problem at all—is sent to a single bureau and is there classified into one of three groups:

1. The indigent who can pay nothing for medical facilities or services.
2. The semi-indigent who can pay a little for hospital care but not for medical services.
3. Those who can pay reasonable fees for medical and hospital care on a deferred payment plan.

The central administration bureau which makes this initial classification is a group of skilled receptionists, record clerks, interviewers and adjustors. They have access to all sources of information about persons residing in the District of Columbia.

Indigent Get Permission Cards

Members of the first group (the indigent) are given a permit card to attend the outpatient department of any of the nine Community Chest hospitals. The Community Chest pays the hospitals 50 cents for each visit. It is understood that this charge does not pay for medical services. If hospitalization is required they are referred also to the Permit Bureau of the Board of Public Welfare, which gives permits for hospitalization in municipal and contract hospitals, only.

Semi-Indigent Helped By the Chest

Members of the second group (the semi-indigent) are dealt with by the Central Administration Bureau, who decide how much of the charge of \$4.00 per day can be paid by the patient himself. The Community Chest pays the rest.

Members of the third group (who can pay reasonable fees on the deferred payment basis) are referred to the Medical Dental Service Bureau. To make use of the services of this bureau the patient must either have been sent by his physician or he must get authorization from his physician or, if he has no physician, he is given a list of reputable physicians from whom to choose to go for medical or dental services.

When the Patient Can Pay

Regular credit arrangements are made with the patient, a reasonable installment agreed upon without any charge to the patient.

From the payments made by the patient, the bureau deducts 10 per cent for expenses and to establish a sinking fund.

Easterners Are Studying It

Medical men all over the East, especially, are watching the progress of the Washington plan with interest.

A group of them from all the seaboard states and east to Pennsylvania met recently and memorialized the Board of Trustees of the American Medical Association on the subject.

The Easterners have asked for another special meeting of the House of Delegates of the American Medical Association to meet and discuss it and kindred questions in February of 1936.

No statement has come from the Board as to whether or not it will be possible to comply with this request.

The bureau was originally financed from the treasuries of the four professional societies who joined in the plan: the Medical Society of the District of Columbia, the District of Columbia Dental Society, the Medico-Chirurgical Society (Negro) and the Robert T. Freeman Dental Society (Negro).

To Be Self-Supporting

It is confidently predicted that the bureau will soon be self-supporting and that the funds will be reimbursed to the contributing societies.

The sinking fund will probably be used to settle accounts of patients who, through adversity, become unable to continue their payments.

Through Mr. Garrett, a substantial contribution was also secured from the Community Chest to defray the expense of the Central Administration Bureau, which investigates and routes all of the patients.

Better Than Sickness Insurance

Great satisfaction is expressed by representatives from Washington with the functioning of this comprehensive plan.

Says the *Medical Annals of the District of Columbia*:

"Every one in the District of Columbia is getting adequate medical care. Physicians, however, are still rendering free service to the indigent and semi-indigent, a condition which, while not entirely just, is infinitely superior to sickness insurance."

Minnesota State Board of Medical Examiners

To The Members Of The Medical Profession:

Re: Szent Norager, alias Dr. James Edw. Petri, Alias Dr. E. Mendoza.

The State Board of Medical Examiners is attempting to ascertain the whereabouts of one Szent Norager, who has used the alias of Dr. James Edw. Petri and Dr. E. Mendoza. This man is of Danish descent, between thirty-five and forty years of age and speaks English rather brokenly. This man has represented himself in the City of Minneapolis as being an M.D. His whereabouts at the present time are unknown. Within the past year he has lived at the following addresses in Minneapolis: 1110 Ulysses Street N. E., 4008 37th Avenue South, and 3863 Minnehaha Avenue. He has been represented as a patent medicine salesman and a fortune teller. Any information concerning this individual will be very much appreciated by the Minnesota State Board of Medical Examiners.

straight jail sentence ever imposed in Minnesota for violation of the basic science law will cause this defendant to revise some of his opinions in reference to the medical laws.

The State Board of Medical Examiners is very grateful for the coöperation that was shown in this case by Mrs. Blanche S. Jones, Lieutenant in charge of the Woman's Bureau of the Minneapolis Police Department, and Mrs. Carrie Bystrom, her assistant. The case was tried for the state by Mr. Howard T. Van Lear, assistant to Mr. Ed J. Goff, County Attorney of Hennepin County. The fact that the jury deliberated only thirty-five minutes before returning a verdict of guilty should be conclusive evidence of the splendid job performed by Mr. Van Lear. The Medical Board believes that the sentence imposed by Judge Guilford should go a long way toward eradicating quackery in Minneapolis. The defendant was not given an opportunity to pay a fine, nor was he placed on probation. The sentence by Judge Guilford means that he will serve ten months in the Minneapolis Work House. The sentence imposed should be impressive not only to this defendant, but to a number of other quacks now operating in the City of Minneapolis.

Minneapolis Quack Given Ten Months In Work House By Judge Guilford

Re: State of Minn. vs. Hyman Ginsberg, alias Dr. Robert Clark, alias Dr. Hy Burgh.

Following a trial by jury in the Court of the Honorable Paul W. Guilford, Judge of the District Court of Hennepin County, Hy Burgh, who was indicted by the grand jury of Hennepin County on July 11, 1935, under the name of Hyman Ginsberg, alias Dr. Robert Clark, alias Dr. Hy Burgh, was convicted of practicing healing without a basic science certificate. The defendant, who is twenty-nine years of age, and a barber by trade, was immediately sentenced by Judge Guilford to a straight workhouse term of ten months. The sentence was imposed on October 30, 1935.

For some time the defendant has operated a barber shop at 125 Oak Grove, Minneapolis. On or about May 1, 1935, an eighteen year old Minneapolis girl went to the barber shop of the defendant for the purpose of having an abortion performed. At the trial this witness testified that the defendant made a vaginal examination; punctured her ear with a needle and obtained a specimen of blood allegedly for the purpose of determining the condition of her health. The witness also testified that the defendant furnished her with capsules for the treatment of her blood condition and gave her a hypodermic injection in the arm. The state showed that the sum of \$46.00 was paid to the defendant in this case. No abortion was performed and since that time the witness has married and is about to be confined.

In the investigation conducted by the State Board of Medical Examiners in coöperation with the Woman's Bureau of the Minneapolis Police Department and the County Attorney's Office, it was discovered that this defendant has repeatedly told patrons of his barber shop that he had studied medicine. Twenty prescriptions furnished by this defendant were found in a Nicollet Avenue drug store in Minneapolis. Thirteen of these prescriptions were in the handwriting of the defendant and seven were telephoned to the drug store. The name given in each case was "Dr. Bergman."

Upon being questioned by Judge Guilford, the defendant admitted that his true name was Hyman Ginsberg; that he had changed his name to Hy Burgh. The defendant also admitted that in March, 1932, he pleaded guilty to the crime of abortion in the District Court of Hennepin County. The investigation in this case discloses that this defendant has exhibited nothing but contempt for the medical laws of this state, but it is possible that the imposition of the longest

Quack Pleads Guilty After Ten Days In County Jail

Re: State of Minn. vs. Carl F. W. Von Hagen, alias "Dr." C. F. W. Hagen

After spending ten days in the Ramsey County jail, Carl F. W. Von Hagen, who represented himself to the public as Dr. Hagen, entered a plea of guilty to an information charging him with practicing healing without a basic science certificate, before the Honorable John W. Boerner, Judge of the District Court, at St. Paul.



Carl F. W. Von Hagen

Hagen, sixty-two years of age, was residing at the time of his arrest on November 2, 1935, at apartment 3, 159 W. Summit Ave. He had arrived in St. Paul about July 1, 1935, coming from California. In Hagen's apartment at the time of his arrest were found approximately 100 bottles of pills and medicine, several instruments such as a microscope, stethoscope, blood pressure apparatus and others of a similar nature. Upon being questioned he stated that he was a homeopathic physician from Munich, Germany. However, when questioned at length in the office of the county attorney, Hagen admitted that he had never graduated from any medical school, nor had he ever lawfully acquired the title of Doctor. A complaint was filed against him charging him with practicing healing without a basic science certificate, and upon being arraigned in the Municipal Court before Judge Finehout, he waived his hearing and had his bail set at \$1,000, which was not furnished. Hagen was remanded to the county jail where he stayed until he entered a plea of guilty. Counsel for Hagen advised the Court that the wife and sister-in-law of the defendant owned a farm a short distance from Charles City, Iowa, and that the defendant desired an opportunity to do farming. Hagen was warned that he could not practice medicine nor healing in the State of Iowa without being lawfully authorized to do so, and he stated to the Court that he had no such intention. Judge Boerner imposed a sentence of one year in the St. Paul Workhouse which was suspended on condition that the defendant refrain from practicing healing in any manner in the future. The Court also ordered the medicine and equipment confiscated by the state. Hagen was

MEDICAL ECONOMICS

placed in charge of the probation officer for Ramsey County.

The State Board of Medical Examiners received splendid cooperation from Mr. James F. Lynch, assistant to Mr. Mike F. Kinkead, County Attorney. Valuable assistance was also received from Mr. A. Johnson, detective assigned to the County Attorney's office. The picture of the defendant was furnished through the courtesy of Mr. John J. Tierney, Superintendent of the Bureau of Identification of the St. Paul Police Department. The State Board of Medical Examiners realizes that the good results obtained in these cases were possible only through the cooperation of these various agencies.

Itinerant Chiropractor Pleads Guilty To Fraudulent Advertising

Re: State of Minnesota vs. Wm. B. Covey, D.C. Following an investigation conducted by the Minnesota State Board of Medical Examiners in cooperation with Mr. T. O. Streissguth and Mr. John Reitter, county attorney and sheriff respectively of Brown County, Wm. B. Covey, who is licensed to practice chiropractic in the State of Minnesota, was arrested at New Ulm, Minnesota, on November 6, 1935, on a charge of fraudulent advertising. The complaint was based upon the insertion of the following ad in the *New Ulm Review* on October 31, 1935:

FREE CLINIC

Wednesday, Nov. 6th

Dakota Hotel—New Ulm, Minn.

I will again conduct a FREE CLINIC in my office in the

DAKOTA HOTEL

I am using a highly developed scientific instrument, and with its aid it is unnecessary for me to ask you one single question as to your symptoms or have you remove any clothing.

This instrument will locate all the diseased organs, glands and tissues, and will definitely locate poisons and infections causing such ailments and diseases that occur in our bodies. I urge you to take advantage of this opportunity, if you are ailing and have not been able to get results or relief, and feel that you have not located the cause of your ailment.

This clinic is sponsored by Dr. Covey, D.C., representing Dr. Niblock's Clinic, Lincoln, Nebraska.

Married women must be accompanied by their husbands, minors by parents.

Hours 9:00 to 5:00

The advertisement is nothing but "bait." The real object of putting on the "free clinic" is to get the ailing to call upon Covey and then an attempt is made to sell them a so-called concentrated health food, a supply of which costs approximately \$10.00 per month per patient. According to the defendant, this so-called food, which is used in the treatment of ailments is sold by "Dr. Niblock's Clinic & Food Laboratories, Lincoln, Nebraska." The "scientific instrument" referred to in the ad is what is known as a *pathoclast*. Covey stated that it was manufactured by the Pathometric Laboratories, Chicago, Ill., but admitted that he did not know how it operated, although it cost him \$400.00, and that he was in such a "highly nervous condition" due to his arrest, that he was unable to demonstrate its diagnostic power in the office of the county attorney. Upon being taken before Otto J. Kolb, Justice of the Peace at New Ulm, Covey entered a plea of guilty and was sentenced to pay a fine of \$75.00 plus \$6.14 court costs, or to serve sixty days in the Brown County jail. Covey stated that he could not pay the fine and accordingly went to jail. A true indication of the quackery and fraud perpetrated in this case is found in the diagnosis given by Covey following an examination with this machine of a patient who called upon Covey at New

Ulm. This patient at the present time is under the care of a New Ulm physician for pulmonary tuberculosis. According to Covey the machine indicated that the patient had kidney trouble. No statement whatever was made by the defendant to the patient about the condition of his lungs.

Covey admitted operating during the past six months in the following towns: Luverne, Pipestone, Worthington, Jackson, Windom, Blue Earth, New Ulm, Springfield, Granite Falls, Canby and Olivia. The Medical Board respectfully requests that it be notified if any advertisements appear in the future in reference to this defendant or this "scientific instrument."

The Medical Board wishes to acknowledge the splendid assistance given in this case by Mr. T. O. Streissguth, county attorney, and Mr. John Fordyce, his assistant. The Board also appreciates the prompt and efficient services of Sheriff Reitter and his deputy, Mr. F. F. Benzel.

This is the first time since the passage of the Basic Science Law that a prosecution has been instituted under the statute forbidding fraudulent advertising. This statute will be resorted to more frequently in the future unless this type of advertising is discontinued throughout the state.

THE CONNELL CANCER CURE

In Kingston, Ont., Dr. Hendry C. Connell, an assistant professor at Queen's University Faculty of Medicine, has announced a new treatment for cancer. It has been heralded by the press as a "cancer cure." Kingston has turned over part of its municipal hall for the enlargement of his research work and the Department of Health of the Ontario government is collecting cancer tissue from all parts of Canada so that Dr. Connell can use it in making up his preparation. He calls it "Ensol." The background of this performance is said to be some experiments made by Dr. Connell four years ago in an attempt to control cataract. He claims to have developed a substance which would break down cataractous lens tissue without reacting on other proteins. By a similar process, he says, he developed an enzyme which would break down cancer tissue. In a letter to *The Journal of the American Medical Association*, Dr. Connell stated that he had promised to submit a complete statement of his work to the Canadian Medical Association Journal and requested the American Medical Association to send a representative to witness his results. He also submitted a statement alleged to be an account of the method of preparation of his product and an account of his results, which include merely some regression of cancer tissue. The methods pursued by Dr. Connell in promotion of his product reveal procedures more like those of the charlatan than of the scientific investigator. Moreover, his statement of the method of preparation of his product is so incomplete and confused as to make duplication of his work impossible. The results he claims are similar to those which have been obtained with a half-dozen other methods. In a few cases there are apparently temporary remissions due to damage of the blood vessels in the tumor. Results just as good occur with the methods used by most of the cancer quacks. There does not appear to be any real evidence that an antitumor enzyme is present in the mixture. Notwithstanding these considerations, newspapers have heralded widely Dr. Connell's claims. Great numbers of sufferers from cancer have been stimulated to false hopes. Time is the true tester of cancer cures—yet newspapers continue to lead cancer sufferers to promoters of cancer cures that have been tested only a few weeks or months. If Dr. Connell really realized his responsibility he would have waited to inform the newspapers until he knew whether or not his "discovery" actually had merit. (J. A. M. A., October 5, 1935, p. 1122.)

OF GENERAL INTEREST

Dr. R. A. Curtis, formerly of Le Center, is now located in Osseo, Minnesota.

* * *

Dr. V. I. Miller of Mankato attended the Railway Surgeons meeting in Chicago, in November.

* * *

Dr. R. N. Andrews of Mankato attended the American Academy of Pediatrics meeting at St. Louis, last month.

* * *

Dr. J. B. Robertson recently moved from Cottonwood, Minnesota, to Minneapolis, and is now living at 4849 Oakland Avenue, South.

* * *

Dr. Fred J. Pratt of Minneapolis was a guest speaker before the Section on Otolaryngology of the Southern Medical Association in St. Louis, Missouri, November 21.

* * *

Dr. Walter Stillwell of the Mankato Clinic, who has been taking special work in Vienna, will return to Mankato about December 8. He reports having a very profitable sojourn.

* * *

Dr. E. M. Sorensen, member of the Bratrud Clinic, Thief River Falls, returned November 1 from Washington University, St. Louis, Missouri, where he completed a four weeks' postgraduate course in pediatrics.

* * *

At the regular monthly meeting of the Union Hospital Medical Staff, New Ulm, Minnesota, on November 13, Dr. Cornelia Saffert spoke on "Heat Stroke." Dr. E. K. Geer of Saint Paul addressed the members on the subject "Oleothorax."

* * *

Dr. Hugh Cabot of Rochester appeared before a special meeting of the St. Louis County Medical Society, November 25, and discussed certain phases of kidney tumors. In the evening he gave the principal address before the Council of Social Agencies, discussing future methods and principles for providing adequate medical service.

* * *

Dr. and Mrs. F. Moersch and Dr. and Mrs. J. L. Bollman of the Mayo Clinic, Rochester, were mobbed by Fascists in Padua when they were mistaken for Britons. Their car bore an English license plate and was damaged in the savage scuffle which lasted a half hour before the police could rescue the Americans. An American flag displayed on the car failed to prevent the disturbance and suffered indignities at the hands of the mob.

* * *

Doctors Elizabeth Bagley, Selma Mueller, and F. H. Magney gave vivid and instructive reports at the November staff meeting of St. Mary's Hospital, of

what they saw and heard at the recent Detroit meeting of the International Assembly. Dr. Magney characterized these well known meetings as a superb review for the general practitioner and a chastening reminder to others that the universality of disease should not permit them to penetrate too isolatedly into the rarefied atmosphere of specialism.

* * *

The voluntary committee of Medical Alumni of the University of Minnesota, formed for the purpose of financing and selecting a suitable memorial to the late Dr. Perry H. Millard, first dean of the Medical School, has collected sufficient funds to carry out the project. At a recent meeting of the committee it was decided to erect in the near future a granite monument with appropriate inscription at Dr. Millard's grave in Stillwater. It is proposed that the monument be dedicated with appropriate ceremonies a few days prior to the meeting of the State Medical Association next spring.

* * *

Warning

A man going by the name of E. H. Flaherty has been soliciting, under false pretenses, cash payment subscriptions to the *American Heart Journal*, published by C. V. Mosby Company, St. Louis, Missouri. He is not an agent for this journal but seems to have a supply of receipt blanks bearing the name of the company and the journal and is making a special offer of a two-years' subscription for \$14.00. The yearly rate for the journal is about to be changed from \$7.50 to \$8.50 and The American Heart Association is offering a year's membership and a year's subscription to the *Journal* for \$10.00, which is correct, but Mr. Flaherty has no authority to make either offer—his own false offer, or that of the Association. He asks for cash payment—or payment by check—stating that the offer is open only to those who pay in advance to the agent. Several Minnesota physicians have been taken in by this crook.

Medicine in Literature

(Continued from Page 796)

for letters. William Carlos Williams is in active practice in Rutherford, New Jersey, but has found time to write a number of books since 1909. One of his later novels, *A Voyage to Pagany*, covers the life of a doctor who becomes tired of the atmosphere of a small town in this country and tries to remedy matters by a complete change. He goes to Europe and lives in the setting of an older civilization but without accomplishing anything.

John Rathbone Oliver is a brilliant example of a many sided mind. He is a musician, a student, a teacher, a psychiatrist, an ordained minister, a medico-legal expert with much experience in criminal matters, a medical historiographer and saw some service in the Austrian Army. There is much evidence of all of these activities in his writings.

What conclusion shall we draw from all this? Simply, I think, that the more opportunity a writer has had to acquire medical knowledge, the more apt he is to use it and the more accurate are his observations.

GILBERT COTTAM

—From *Hennepin County Medical Bulletin*, 6:57, (June 25) 1935.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for December

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 10:00 a. m. every Monday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:
December 2—Parents and Children.
December 9—Growth Disturbances.
December 16—Swallowing Difficulties.
December 23—Fighting Tuberculosis.
December 30—1935, Medically Speaking.

Duluth Surgical Society

The newly organized Duluth Surgical Society held its first meeting in October and plans to hold a monthly dinner meeting preceding the meetings of the St. Louis County Medical Society. Dr. T. O. Young is president and Dr. P. F. Rudie is secretary-treasurer.

Minnesota Society of Internal Medicine

At the semi-annual meeting of the Society of Internal Medicine, held in Saint Paul, November 11, Dr. F. J. Hirschboeck, Duluth, was elected president; Dr. George Eusterman, Rochester, vice president, and Dr. Max H. Hoffman, Saint Paul, secretary-treasurer. It was decided to hold the spring meeting at Duluth, instead of at Rochester, so as not to conflict with the State Medical Association meeting, which this year will be held at Rochester at about the same time.

Red River Valley Medical Society

The fall meeting of the Red River Valley Medical Society was held at the Hotel Warren, Warren, Minnesota, on the evening of October 29. The meeting was preceded by a dinner. The scientific program was as follows: "Rupture of the Spleen"—Dr. C. W. BURNS, Winnipeg; "Fracture of the Shaft of the Humerus"—Dr. A. P. MACKINNON, Winnipeg; "Case Report of Lateral Sinus Thrombosis"—Doctors L. G. CULVER and R. V. SHERMAN, Thief River Falls.

Renville County Society

Dr. A. J. Chesley, of the State Board of Health, talked on "Public Health Problems" at the annual meeting of the Renville County Medical Society, held at Fairfax, Minnesota, Tuesday, November 19.

The following officers were elected for the coming year: President, Dr. A. A. Passer, Olivia; vice president, Dr. R. C. Adams, Bird Island; secretary-treasurer, Dr. John Dordal, Sacred Heart; delegate, Dr. R. C. Adams, Bird Island; alternate, Dr. R. S. Madland, Fairfax.

Saint Paul Surgical Society

The first meeting of the recently formed Saint Paul Surgical Society was held in the Ramsey County Medical Society rooms, Thursday, November 14, 1935. The officers are Dr. Harry B. Zimmerman, president; Dr. E. Mendelsohn Jones, vice president; Dr. Logan Levin, secretary-treasurer. Dr. William T. Peyton and Dr. Owen H. Wangenstein have been made honorary members of the society, which numbers thirty-two active members. Monthly meetings will be held the second Thursday in each month.

WOMAN'S AUXILIARY

Mrs. F. J. ELIAS, President, Duluth, Minn.
Mrs. L. W. BARRY, Editor, Press and Publicity,
2193 Sargent Ave., St. Paul, Minn.

The various county auxiliaries to the Woman's Auxiliary to the Minnesota State Medical Association have begun their work for the year and interesting reports are coming in concerning their activities.

Ramsey County.—The Auxiliary to the Ramsey County Medical Society, under the able leadership of Mrs. J. J. Ryan, held its first meeting in October at the home of Mrs. H. E. Binger. Between ninety and 100 members were present. At the business meeting, tentative plans to form a Study Club of interested members, for the purpose of studying medical problems of interest to the wives of doctors, were discussed and approved. It was voted to add the names of Mrs. Archibald MacLaren, Mrs. Arthur Sweeney, Mrs. P. H. Bennion and Mrs. John Fulton to that of Mrs. H. P. Ritchie, as honorary members of the society. Mrs. Ritchie is also an active member. In the absence of Mrs. F. J. Elias, president of the State Auxiliary, Mrs. E. M. Hammes, president-elect, gave an interesting message from the State Society. After the business meeting, a program of music given by Mrs. Adolph Ahrens and Mrs. Webb Raudenbush was enjoyed.

St. Louis County.—The Auxiliary to the St. Louis County Medical Society is a very active group and already have added considerably to their treasury by various ways. Mrs. R. S. Forbes of Duluth is directing the work this year. They have raffled off two dolls, completely outfitted with hand-made wardrobes, netting them about \$20.00; a bridge party netted about \$55.00, and at the last monthly meeting a Reno party brought in \$15.00. They are also gathering canned goods, jams and jellies for the Christmas baskets which the Philanthropic Committee distribute to needy families at

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

Christmas time. They also plan to award a scholarship to a graduate nurse in the spring.

Mower County.—Mower County Auxiliary has held two regular meetings this fall at St. Olaf Hospital in Austin. Members spent the afternoons folding dressings for the hospital.

* * *

Mrs. F. J. Elias, president of the State Auxiliary, and Mrs. E. M. Hammes, president-elect, recently attended a Board meeting of the Woman's Auxiliary to the American Medical Association in Chicago.

* * *

From the American Medical Association comes the announcement of radio programs. Dr. W. W. Bauer outlines what the auxiliary can do to help the A. M. A. radio programs, as follows:

1. Listen to it, so you will know what it is.
2. If the local NBC station does not take it, ask them to do so.
3. Write letters to the National Broadcasting Company, if you like the program, and to the A. M. A. if you do not, stating *why*.

4. Tell your friends about it.
5. Tell organizations about it, especially those to whom it may be useful—Women's Clubs, Child Study Groups, Parent-Teachers' Associations, and schools.

* * *

"Your Health—Ladies and Gentlemen . . ."

This toast—through the music—each Tuesday, at 4:00 p. m., Central Standard Time, introduces the new radio program of the American Medical Association offered over the Blue network of the National Broadcasting Company. With the coöperation of the National Broadcasting Company, a new type of program, in vivid dramatic form with incidental music, has been developed, showing medical emergencies and how they are met. The hero of the medical emergency, the doctor who is available day and night for the protection and promotion of your health, is the real sponsor of this series of practical and entertaining health broadcasts.—North Central States Number News Letter, October, 1935.

PROCEEDINGS of the MINNESOTA ACADEMY OF MEDICINE

Meeting of October 9, 1935

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 9, 1935. The President, Dr. A. R. Hall, in the chair.

There were fifty-six members and one guest present. Dr. J. M. Armstrong read the following Memorial to Dr. C. Naumann McCloud.

DR. CHARLES NAUMANN MCLOUD, a member and former president of this Academy, died of tularemia, August 13, 1935. To have known him provides sufficient evidence that no eulogy of his life need be pronounced. First and foremost, he was a gentleman, a lovable companion, and a loyal friend. His family life was a particularly happy one and no trace of misconduct marred his career as a husband and father or in his relationship with his fellow men. As a general practitioner, he was a sympathetic advisor and able counselor. He had the respect of his confreres and was loved by all who knew him.

Dr. McCloud was born in St. Paul, February 9, 1872. He received his preliminary education in the Public Schools and at Macalester College, and obtained the degree of Doctor of Pharmacy from the University of Minnesota in 1895. In 1901 he was graduated from the Medical Department of the same institution. He was intern at the City and County Hospital the following year, and was Assistant City and County Physician in 1903.

In 1903 he became associated with the Minnesota Mutual Life Insurance Company, as Medical Referee,

and was advanced from time to time until he became Medical Director, in 1908, and Vice-President of the Company in 1934. He retired from general practice in 1933 to devote his entire time to his insurance work.

Dr. McCloud was president of the Ramsey County Medical Society in 1920, and was a member of the State and American Medical Associations, the Association of Life Insurance Medical Directors, and the American Life Conventions, having served as chairman of the Medical Section of the latter organization. He was a member of the staffs of St. Luke's and the Charles T. Miller hospitals.

In addition to his professional associations, he was a member of the Masonic order, the Minnesota Club, the Theta Delta Chi and Nu Sigma Nu Fraternities, and of St. Clement's Episcopal Church; to all of which organizations he gave his devoted and generous support.

On October 18, 1904, Dr. McCloud was married, in St. Paul, to Agatha de Lambert, who survives him. One son, David M., a graduate of Harvard, is an attorney in Dallas, Texas; and the younger, Charles Naumann, Jr., a graduate of Princeton, is attending the University of Minnesota preparing to follow his father's profession.

The Committee:

J. M. ARMSTRONG
F. E. BURCH
H. W. COOK

The scientific program followed.

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

ACUTE ATROPHY OF BONE

Report of an Unusual Case Involving the Radius and Ulna

M. S. HENDERSON, M.D.
Section on Orthopedic Surgery
The Mayo Clinic
Rochester

Abstract

Acute atrophy of bone is a definite clinical entity distinct from the chronic atrophy of bone that follows disuse, and is commonly seen in the extremities and in the spinal column. The lower extremity is affected more often than the upper, and atrophy is usually limited to the bones of the foot, although the lower end of the tibia and fibula may also be involved. There is frequently an initial injury, although atrophy may develop spontaneously. Such injury is usually slight, a simple twist, a blow, or a bump, and there ensues a latent period which varies in length and may last a few days to a few weeks, although when the spinal column or long bones are involved it may extend into months. The signs vary according to the site of the disease. In the upper extremity the condition is manifested usually in the bones of the hands and wrists, and is more often seen following a severe injury, such as a fracture, than is the case in the lower extremity. Edema, cyanosis, and atrophy of the skin are the common objective signs, and pain and soreness the subjective. Wasting of muscle is commonly seen. In the lower extremity the disease usually lasts over a period of months, but it may last several years and cause total disability in the extremity affected.

The radiological findings are more or less typical. There is no alteration in the form but a diminution in the density of the bone. The roentgenogram discloses a moth-eaten appearance of the bones involved during the acute stage but, as the condition becomes more chronic, this moth-eaten appearance disappears. The spongiosa become wide meshed and the lamellae are thicker and stronger, but chiefly the longitudinal fibers. The prognosis is good although the disease may last from a few months to several years.

Treatment consists of heat, contrast baths, massage, and active and passive movements, the former being by far the most important. Use to the point of toleration of the affected limb is indicated. Supports and braces and casts are contraindicated, as are manipulations, particularly under anesthesia. Lerche of recent years has advocated ganglionectomy and has reported cases showing its usefulness, but it seems rather a heroic measure for a condition that responds so well to conservative measures.

In 1925 Noble and Hauser reported from the Mayo Clinic forty-eight cases covering the period from 1912 to 1924. I reviewed the Mayo Clinic files from 1930 to 1934 and found fifty-five additional cases. In eight

of these acute atrophy of the bone occurred in the hand and in forty-seven in the foot and ankle. In eighteen of the forty-seven cases in which the foot and ankle were involved, there was a definite history of trauma. In those cases in which the onset was sudden and without trauma, the duration of the disease was longer and they did not respond so well to treatment.

The case reported was an unusual case of atrophy of the bone of the radius and ulna following a mild injury. The patient came to the Mayo Clinic two years after the onset and in that time there had been one exploration of the bone with negative findings. There had been a pathological fracture of the ulna in the upper third and of the radius in the upper third, both fractures coming on during some slight movement. The findings at the time of the examination in the clinic in October, 1925, disclosed pathological fractures in the bones with extreme atrophy and almost complete disappearance of the ulna in its entirety, the radius also showing atrophic changes. The patient was under observation for eight months and the atrophy continued. Several times three to four ounces of clear serous fluid was withdrawn with an aspirating needle. Guinea pig inoculation tests for tuberculosis were negative. Finally, the arm was operated upon, massive bone grafts being applied at one time to the ulna and later to the radius. The radius completely regenerated and the ulna partially in the lower two-thirds. Amputation had been advised, and the bone grafting operations undoubtedly saved the arm. The elbow at present is a poor elbow, being somewhat flail, but the hand is normal and the patient reports now, ten years after the operation, that he does practically everything and has no discomfort.

There is no adequate explanation as to the etiology. The probabilities are that the acute atrophy of the bone is due to a trophneurosis partially explainable on the theory that reflex irritation and stimulation of the trophic nerves produces an increase in the metabolism of the tissues and that for some unknown reason the calcium is carried away from the bone.

Discussion

DR. A. R. COLVIN (St. Paul): In discussion of Dr. Henderson's paper, I should like to show some x-ray films of a case very similar to the one he reports. The films are of the radius of a young woman, 23 years of age, a nurse at the City Hospital. She attributed her trouble to having lifted a heavy sterilizer lid and was said to have had a green-stick fracture. This was about a year before I saw her in 1925. She complained then of severe and constant pain in her arm, though objectively there was nothing to be made out. The radiograph showed a mere washed-out shadow of the radius, the bone being about the normal size, however, and so presenting the appearance of eccentric atrophy. She complained so bitterly after a while that I reluctantly consented to explore the bone, hoping that this might afford some relief. The wound healed quickly but there was no relief of pain. The tissue

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

removed showed some exceedingly fine trabeculae and a rather loose fibrous tissue replacing the medullary tissue; not, however, being exactly like osteitis fibrosa. There was no excess of fatty tissue in the medullary cavity as is so often seen in the acute atrophy of bone in the neighborhood of inflammatory lesions. The patient went shortly to another hospital and there was treated with diathermy, with no relief. The second film, taken one and a half years later than the first one, shows a more advanced atrophy.

The decalcification of bone seen in hyper-parathyroidism can be excluded here by the pathological findings both macro- and microscopically. The decalcification here is simply part of the bone atrophy in general. Bone atrophy is a very important subject, especially since the advent of the x-ray. In the early days of radiography, confusion sometimes arose. One of my early confusions was what seemed to be a cavity in the head of the humerus in a case of chronic sub-deltoid bursitis. In this case the supposed cavity represented a very atrophic condition in which the medullary and spongy tissue of the head was replaced by fatty tissue; this being so marked at times that the condition is spoken of as lipomiasia. An extremely acute bone atrophy is seen in the carpal and tarsal bones in acute arthritis of the carpal and tarsal articulations. Here the bones are surrounded by multiple acute arthritis and atrophy is sometimes so pronounced that osteomyelitis has been confused with the clinical condition. It is said that acute gonorrhoeal arthritis is accompanied by the most marked atrophy. It is difficult to classify the atrophy in the case I have shown; decalcification is present only as an accompaniment of the general atrophy. Acute inflammation as a cause was absent.

We have had 25,000 cases of fracture at the St. Paul City Hospital in the last ten years and no atrophy of this kind has been seen.

Sudek theorized as to the neuropathic nature of acute bone atrophy but it would seem as though we are still in the dark in cases of the kind reported.

DR. HENDERSON (in closing): I wish to thank Dr. Colvin for his discussion. His case appears to be very similar to the one I am reporting but, fortunately, only one bone was involved. Atrophy of the bone occurs more commonly in the foot and ankle and the usual story given by the patient is that he has bumped his ankle or foot against some object and did not pay much attention to it, but that in a few days the foot became sore and he began to limp. When it comes to treatment, the worst thing that could be done is to put the affected part at rest in a splint or cast. These patients should be encouraged to use the foot to the point of toleration. Industrial cases are slow to recover, much slower than the case of a man on the farm who is receiving no compensation. The treatment should be conservative and should consist of physical therapy with the institution of active and passive movement, heat and gentle massage. The prognosis is good, but the length of time before full recovery takes place varies, in the foot, from six months to one and one-half years.

SPINAL CORD INJURIES

E. M. HAMMES, M.D.

Saint Paul

Abstract

Spinal cord injuries, similar to brain injuries, are occurring in rapidly increasing numbers, due particularly to high speed automobile accidents. During the past four years, 154 cases of fracture of the vertebrae (cervical 51, dorsal 36, lumbar 67) were admitted to the surgical service at the Ancker Hospital, a fairly large percentage presenting neurological symptoms of variable degree. To these must be added the cases of spinal cord injury without fractures, such as spinal concussion, hematomyelia, and penetrating wounds.

Spinal concussion is a definite clinical entity as has been clearly pointed out by Gordon Holmes in his studies during the World War. The hematomyelia are more prone to manifest themselves in the gray matter of the spinal cord, the incomplete transverse lesion develops very suddenly, and the prognosis is usually more favorable than the acute clinical syndrome warrants. Surgery is contraindicated in concussion and hematomyelia, but therapeutic spinal drainage may be of benefit.

The subdural hematomas rarely occur in pure form and are usually complicated by a hematomyelia or cord trauma. Fracture dislocation of the vertebra, with associated spinal cord injuries, presents a varied syndrome depending upon the level of the lesion and the extent of trauma to the cord. Laminectomy is definitely indicated in only a small percentage of this group, for most cases will improve as much with conservative treatment as with surgical intervention.

Among the delayed manifestations of spinal cord and root involvement due to vertebral traumas, Krummell's post-traumatic spondylitis and the herniation of the nucleus pulposus are the most frequent. Orthopedic measures in the first, and surgical removal of the nucleus in the second group, offer the best outlook for recovery.

Cases of spinal concussion, hematomyelia, fracture-dislocation with cord injury, and so forth, are reported.

Discussion

DR. GEORGE N. RUHBERG (St. Paul): Dr. Hammes has covered such a wide field that it is difficult to adequately discuss it. I would reiterate the importance of x-rays in all spinal injuries. Occasionally unsuspected and surprising things are found. Sometimes the obvious injuries, such as bruises, cuts, etc., draw the entire attention of the attending physician and only later with x-ray studies are fractures of the spinal column found.

Referring to Dr. Hammes' case of hematomyelia involving the arms, this brings to my mind a friendly difference of opinion regarding the case. I saw this young lady quite some time after she left the hospital and at that time it appeared to me to be a predominantly peripheral paralysis involving the left upper

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

arm and shoulder. In view of that picture and the subsequent course I am still of that opinion. This case also illustrates the value of time in coming to a conclusion about the ultimate prognosis in nerve injuries.

DR. M. S. HENDERSON (Rochester): I am very much interested in the cases which Dr. Hammes is reporting. They are a trying lot of cases to treat. The hematomyelia group are the ones that do make improvement and sometimes attain full recovery. I recently heard of a way of applying skeletal traction to the high cervical fractures advanced by Dr. Claude C. Coleman of Richmond, Virginia. He devised special tongs which are inserted in little holes made in the outer layer of the skull and in that way, firm and steady traction is maintained. We are all well acquainted with the extreme difficulty that we have in maintaining traction in cervical fractures by aid of some form of cloth or leather halter. They are not only inefficient but very uncomfortable. Skeletal traction is the ideal form of traction and if it can be used safely in this manner it will bring comfort to both patient and surgeon.

DR. F. R. WRIGHT (Minneapolis): It seems to me that the most remarkable case presented by Dr. Hammes was the one which, following an injury of the neck, had a paralysis of both arms with normal motion and sensation in the lower part of the body. The injury must produce local damage in the cord similar to that in poliomyelitis which attacks one group of nerves. Professor Jones, of Liverpool, states that, following an attack of poliomyelitis, the fibers in the nerves degenerate and that when repair takes place these fibers regenerate at the rate of approximately an inch a month. It would seem to me reasonable that regeneration following a localized injury in the cord should take place approximately in the same manner and in the same time. Since Dr. Hammes says that she recovered in 13 months, either complete regeneration of the nerve fibers did not take place, or regeneration occurred more rapidly than in a case of poliomyelitis.

In this connection I would like to report a case. Within the last thirty days I have called to see a man who, about three years ago, was thrown from a horse and his back injured. Dr. Geist did a laminectomy on him. Following this operation he recovered so that he was able to walk around his farm. About a year ago he developed a perinephritic abscess which was drained, and still drains. He has been in bed practically ever since. When I first saw him he was lying in bed and looked perfectly well. I asked him if he was paralyzed and he said no; but on examination there was only 15 to 20 per cent motion in the legs. The skin from the knees down was pale, soft and smooth and had the feeling of fine Morocco leather. In spite of the fact that he is a hairy individual, every hair below his knees has disappeared. This man has a slowly ascending atrophy of the skin as a late result of this cord injury.

DR. HAMMES (closing): I wish to thank the members for their kind discussion. In reply to Dr. Ruh-

berg's diagnosis that the patient with bilateral upper extremity paralysis might be due to a brachial neuritis, I cannot conceive how a person, receiving a sudden blow to the back of the neck and immediately following it developing a motor paralysis of both upper extremities, could have a traumatic neuritis. The fact that the electric reaction was one of degeneration in the paralyzed muscles does not speak against a lesion in the anterior gray matter in the cervico-dorsal region. An electric reaction of degeneration does occur whenever any part of the lower motor neuron is involved. This extends from the anterior horn cells to the motor end plates.

REFLEX URINARY FREQUENCY

F. R. WRIGHT, M.D.
Minneapolis

Dr. Wright reported a case of reflex urinary frequency.

Abstract*

Mrs. S. came to me on January 8, 1935, complaining of frequent urination and a heavy feeling of pressure in her pelvis.

The patient is thirty-six years old, weighs 140 pounds, has always been in good health, is married and has two children, thirteen and eleven years of age, both deliveries being normal. One year after her second child was born (that is, ten years ago) she began having a feeling of weight and pressure in her pelvis accompanying her menstrual period. At the same time she developed a leukorrhea. These pelvic symptoms have increased during the last few years until the pressure pain in her pelvis during her menstruation has become almost unbearable and the leukorrhea has increased so that she is compelled to wear a napkin most of the time. Menstrual flow is normal and unaccompanied by any pain or distress.

About four or five years ago she began to have a colicky pain in the region of the umbilicus. This pain was referred from the umbilicus to the rectum. These attacks of umbilical pain have occurred every few months but have not been of long duration, 15 or 20 minutes, though severe enough to compel her to leave her work and lie down.

On January 2, 1935, the patient had an attack of umbilical pain which lasted only about ten minutes. On January 6, she began to have frequent urination, increasing in severity until on January 8, when I first saw her, she was voiding her urine every thirty minutes, day and night. She was having so much pain and pelvic distress that I did not undertake to make a pelvic examination and was unable to obtain a specimen of urine. Her temperature was 98.6°, pulse 80.

At this time she was given a sedative, told to take prolonged hot douches, and to come and see me again in a day or two. She returned on January 11. The

*Complete report in October, 1935, issue of *Urologic and Cutaneous Review*.

BOOK REVIEWS

pain was less severe but she was still voiding at very frequent intervals. Temperature 98.6°, pulse 80.

At this second visit a pelvic examination was made but nothing pathological could be detected. The uterus was in normal position, there was no thickening or tenderness in the region of the tubes. At this time I examined her abdomen and found a very slight tenderness, on deep pressure, in the region of McBurney's point. There was no muscular rigidity or spasm. She denied ever having had any pain in her abdomen except the colicky pains in the region of the umbilicus, and stated that never at any time had she had any soreness or tenderness in the region of McBurney's point.

A diagnosis of exacerbation of a chronic appendicitis was made and operation advised.

She entered the hospital on January 14 and was operated on the 16th. In the hospital her temperature was 98°, pulse 80, respiration 20, white cell count, 10,000. The urine was reported to be hazy and contained a moderate number of pus cells. She was operated through a median incision. Pelvic examination showed the uterus, tubes and ovaries to be normal. A retrocecal appendix, 6 cm. long, was removed. Laboratory diagnosis: Subacute appendicitis.

The only local treatment received during her stay in the hospital was irrigation of her bladder on the third and fifth days with a hot 1/3000 permanganate solution. The patient left the hospital on the tenth postoperative day, free from all pelvic symptoms.

I did not see her again until about five months after her operation. When I asked her how she was feeling she said she was in perfect health and added that not only her bladder symptoms but also all of the feeling of pain and pressure which had accompanied her menstrual periods for ten years as well as the leukorrhea had disappeared.

Discussion

DR. A. E. BENJAMIN (Minneapolis): I think we all have seen cases such as Dr. Wright reports. I recall a patient I operated on who could not go fishing because, if he did, he would usually have a pain in his abdomen. He also had albumin in the urine and could not get insurance. We removed his appendix, after which the albumin disappeared from his urine.

In cases of dysmenorrhea, often the symptoms are reflex or associated with an appendix attached to a tube or ovary. I have seen cases where the appendix was attached to the bladder; also where it was found fixed over the ureter, which resulted in pus in the urine.

DR. WRIGHT (closing): I might add that I had a brother who, for years, had a backache. He finally went to Dr. Geist, who went over him thoroughly and said the only thing he could find wrong was a slight tipping of his pelvis, the right side being lower than the left. He gave him a pad one-half an inch thick to wear in the heel of his right shoe. This improved, but did not entirely relieve, his backache. He wore this pad for ten years, when he was awakened in the

night with a pain in his abdomen and before morning his appendix, which had never before bothered him, was removed. Much to his surprise, when he got up and around, his backache had disappeared, never to return.

The meeting adjourned.

R. T. LAVAKE, Secretary.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

OBSTETRICAL PRACTICE. Alfred C. Beck, M.D., Professor of Obstetrics and Gynecology, Long Island College of Medicine, etc. 702 pages. Illus. Price, cloth, \$7.00. Baltimore: Williams & Wilkins Co., 1935.

ÜBER DIE RHYTHMUS DER LEBERFUNKTION, DES STOFFWECHSELS UND DES SCHLAFES. Erik Forsgren. 56 pages. Illus. Stockholm: Isaac Marcus Boktryckeri-Aktiebolag, 1935.

BEHAVIOR DEVELOPMENT IN INFANTS. Evelyn Dewey. 321 pages. Price, cloth, \$3.50. New York: Columbia University Press, 1935.

RUSSELL A. HIBBS. George M. Goodwin. 136 pages. Illus. Price, cloth, \$2.00. New York: Columbia University Press, 1935.

SURGERY OF A GENERAL PRACTICE. Arthur E. Hertzler, M.D., and Victor B. Chesky, M.D., 602 pages. Illus. Price \$10.00. St. Louis: C. V. Mosby Co., 1934.

This edition is an enlargement of the author's previous "Minor Surgery." It deals chiefly with simple descriptions of procedures applicable to office and home. The various subjects are treated according to regions of the body; for example: Infections of the jaw, mouth and tongue; infections of the neck; diseases of the chest (including injuries), anal region, genitals, et cetera. Vascular diseases are discussed, particularly varicose veins.

A brief résumé of the chapters follows:

In the chapter on wounds and hemorrhage a very elementary description of the different types of wounds is given. Hemorrhage is considered with treatment chiefly by means of control. A suggestion of transfusion is given but no mention of methods of technic is made. In closing the chapter, the author says: "If you must put something in the veins, a glucose solution is more easily used."

In the chapter on infections, erysipelas is discussed with mention of the usual local treatment. The author states the value of serums in question. There is no mention of ultra-violet treatment. Likewise, in the discussion of gas gangrene, no mention is made of the

BOOK REVIEWS

use of serums in treatment. An excellent description is given of cellulitis.

On the care of wounds a very good descriptive method of treatment is given, with illustrations. The methods described are those the author has found useful and successful in his practice. A lacerated wound of the palm is shown, treated with a gauze drain between the flaps after suturing. This, though contradictory to the teaching of Boehler and others, is probably equally good in the author's hands.

The entire book is filled with illustrations, which, of course, is a great aid in differential diagnosis and in making technic more understandable. This volume is well worth adding to the general practitioner's library.

MODERN HOME MEDICAL ADVISER. Your Health and How to Preserve It. Edited by Morris Fishbein, M.D. Price \$9.50. 905 pages with 140 illustrations. New York: Doubleday, Doran and Co., Inc., 1935.

How much demand there is nowadays for a family health book remains to be seen. Some maintain that the laity is too much informed on medical subjects. However, many intelligent citizens, parents particularly, ask their medical advisers questions about health and disease. For them this volume affords a ready reference book of authentic medical knowledge, written, as it is, by medical authorities.

Dr. Fishbein, in addition to being editor of the volume, has contributed chapters on Choice of Physician, the Family Medicine Chest, First Aid, Hygiene of Women, the Prevention and Treatment of Infectious Diseases, Transmittable Diseases, the Respiratory Diseases, Rheumatism, Eye, Ear, Nose and Throat, Venereal Disease, Care of the Teeth, and Old Age.

It is impossible to review each chapter in a brief report. However, the handling of Sex Hygiene, by Thurman B. Rice, deserves special mention as it is a masterful treatment of a difficult subject. There is much need for a dissemination of the sane, plain spoken and yet idealist views expressed in this chapter. It is noticeable that the writer finds objections to all of the contraceptives mentioned. One may be surprised, too, that in Dr. Fishbein's chapter on Hygiene of Women the safe period for prevention of conception is given with such assurance.

Mothers will find valuable information on the care of mothers before and after childbirth and on the care and feeding of children, although the latter subject is not as completely handled as in books available on this subject. The chapters on infectious diseases are also available for ready reference.

While the chapters on kidney disease and the special senses are rather too detailed for a lay volume, those on allergy, deficiency diseases and internal glands are of timely interest.

Nervous and mental disorders are briefly but well handled by Dr. George K. Pratt, and the importance

of the proper training of children in the prevention of later mental disease is emphasized. This chapter and the one on Sex Hygiene both emphasize the high calling of motherhood as a career, a fact not fully realized.

While parts of the volume will serve merely for reference, much will be found interesting and very instructive to adults, especially parents. It is not a book which most parents will feel like having accessible to their children.

C. B. DRAKE, M.D.

The National Formulary, Sixth Edition

The American Pharmaceutical Association announces that its Council has officially approved December 16, 1935, as the date when the new N. F. VI will be released for sale in all parts of the country, and has also approved June 1, 1936, as the date when the N. F. VI will become official and will supersede the N. F. V.

As previously announced, the N. F. VI will be distributed for the Association by the Mack Printing Company of Easton, Penn.

The new National Formulary represents a complete and thorough revision of N. F. V. Admissions and deletions are based on information obtained in the U. S. P.-N. F. Prescription Ingredient Survey. This survey was made to determine the materials prescribed and the extent of their use throughout the country. The N. F. VI, therefore, supplements the scope of the Pharmacopoeia and supplies additional information on simples, formulas, diagnostic reagents and standards required by the pharmacist in the practice of his profession.

Of the 689 monographs in the N. F. VI, 208 are Drug or Chemical Monographs and 481 are Monographs of Pharmaceutical Preparations. The more important additions have been in the monographs for ampuls, tablets, fluidextracts, syrups, tinctures and ointments.

Vitamin D in Common Foods

The sources of vitamin D or vitamin D effects are now so easily available and so widely distributed that the question of an adequate supply would hardly seem to concern greatly any average American. Nevertheless, pediatricians who see constantly the effects of an inadequate supply of vitamin D are inclined to deprecate the manner in which vitamin D is made available and in which it is used by the vast majority of people. A recent survey on the amounts of vitamin D in common foods indicates that, with the exception of egg yolk and butter, none of the ordinary foods contain any substantial amount of vitamin D. Few human beings in large Northern cities obtain any substantial amount of sunshine except possibly in summer. The main source of vitamin D must therefore come to the human being from exposure to ultraviolet rays, from natural sources of this vitamin or from extra vitamin D obtained through materials that have been enhanced in their vitamin D potency. Nutritional authorities believe that man has been deprived of the vitamin D that he used to get by natural methods and that insistence or an additional source of this vitamin will be for the benefit of mankind. Certainly, so far as the growing child is concerned, some additional vitamin D may be necessary everywhere. Quite recently the thought that an oversupply of vitamin D would be developed in this manner and that the eventual effects of this oversupply would be toxic has been reemphasized in various places. Thus far the evidence seems to indicate little likelihood of harm. (J. A. M. A., Oct. 26, 1935, p. 1354.)

INDEX TO VOLUME 18

A

- Abscess, Anal, and anal fistula, 655
Acute atrophy of bone (abstract), 814
Acute fractures of the spine, 88
Acute perforations of the gastro-duodenal area, with special reference to those of traumatic origin (case report), 238
Adenocarcinoma, Papillary colloid, of the extrahepatic bile ducts (case report), 460
Adenoma, A basophilic, of the pituitary gland, 73
Adrenal gland, The present status of our knowledge of the, 66
Adson, Alfred W., Brown, George E., and Craig, Winchell McK.: The treatment of severe essential hypertension, 134
Alexander, H. L.: The present status of clinical allergy, 773
Allergic child, The care of the, 292
Allergy, clinical, The present status of, 773
Allison, R. G.: Pathological fractures, 187
Ambulant treatment of hernia, The, 441
Ambulant treatment of varicose veins by ligation, division and injection of the distal segment, The, 592
Amebiasis: Diagnosis, prevention and treatment, 515
Anal abscess and anal fistula, 655
Anderson, Carl M.: Some observations on the intranasal operation for frontal sinusitis, 744
Anemia, Idiopathic hypochromic, 504
Anesthesia, Current events in, 261
Aneurysms, arterio-venous, and cavernous hemangiomas, The treatment of some types of, 260
Aneurysm, Traumatic arteriovenous, of right superficial temporal artery and vein (case report), 158
Angioid streaks of the retina associated with pseudoxanthoma elasticum, 599
Ankle, Intra-articular fractures of the, resulting from indirect violence, 97
Annual symposium on cancer, Minneapolis Surgical Society, 409 and 481
Annual symposium on fractures, Minneapolis Surgical Society, 183
Arterio-venous aneurysms and cavernous hemangiomas, The treatment of some types of, 260
Arthritis, painful ankylosing, Late results in a case of arthroplasty of both hip joints for, 553
Arthrodesis, Subastragaloïd and triple, 260
Arthroplasty of both hip joints for painful ankylosing arthritis, Late results in a case of, 553
Ascites of indeterminate origin, 510
Attempted suicide, 148

B

- Bacon, Donald K.: Blood transfusion in the treatment of sepsis, 30
Balfour, Donald C.: The evaluation of the treatment of duodenal ulcer, 554
Bargen, J. Arnold, and Brust, John C. M.: Chronic ulcerative colitis among elderly persons, 583
Barry, L. W.: Dysmenorrhea, 525
Basophilic adenoma of the pituitary gland, A, 73
Baxter, S. H.: Melanoma, 409
Beard, Richard Olding: Graduate medical education of certain sorts in Minnesota, 557
Berdez, George L., and Collins, Arthur N.: Ossifying hemangio-endothelioma (case report), 157
Berrisford, Paul D.: Herpes zoster ophthalmicus, 741
Bieter, Raymond N.: Medical aspects of the commoner industrial poisonings, 234

- Bile ducts, extrahepatic, Papillary colloid adenocarcinoma of the (case report), 460
Biliary tract, Visualization of the, by injection of radio-opaque media postoperatively, 259
Binger, Melvin W., and Keith, Norman M.: Ascites of indeterminate origin, 510
Biological phenomena in Hodgkin's disease, 263
Birnberg, T. L.: Mumps meningo-encephalitis, 377
Blood pressure, The effects of sodium and potassium salts on carbohydrate metabolism and, 257
Blood transfusion in the treatment of sepsis, 30
Bone, Acute atrophy of (abstract), 814
Borderline between neuropsychiatry and general medicine, The, 26
Borg, Joseph F.: Hyperparathyroidism, 65
Boyer, Samuel H., Jr.: Idiopathic hypochromic anemia, 504
Braasch, William F.: Transurethral prostatic resection, 224
Bratrud, A. F.: The ambulant treatment of hernia, 441
Breast, Ten years of surgery for cancer of the, 131
Briggs, John Francis, and Oerting, Harry: Influence of gastric lavage on familial and non-familial erythremia, 499
Broken nose, The, 101
Brown, George E.: Disturbances in peripheral circulation, 139
Brown, George E., Craig, Winchell McK., and Adson, Alfred W.: The treatment of severe essential hypertension, 134
Brown, Percy: The inception and development of fluoroscopy: The influence of Carman on its status in America, 699
Brown, Philip W., and Magath, Thomas B.: Amebiasis: diagnosis, prevention and treatment, 515
Brust, John C. M., and Bargen, J. Arnold: Chronic ulcerative colitis among elderly persons, 583
Burch, Frank E.: Retinal detachment, 201

BOOK REVIEWS

- American Medical Association: Annual reprints of the reports of the Council on Pharmacy and Chemistry (1934), 559
American Medical Association: Apparatus accepted by the Council on Physical Therapy, 760
American Medical Association: New and non-official remedies (1935), 694
American Pharmaceutical Association: National formulary, sixth edition, 818
Ansbach, Brooke M.: Gynecology, 64
Babcock, W. Wayne: Textbook of surgery, 490
Broomhead, R.: A summary of the treatment of fractures and dislocations, 419
Brown, Lawrason: Rules for recovery from pulmonary tuberculosis, 64
Clendenning, Logan: Methods of treatment, 328
Collins, Wm. S.: System of diet writing, 693
Colwell: Daily log for physicians, 130
Dunbar, H. Flanders: Emotions and bodily changes, 693
Elmer, Warren P.: Physical diagnosis, 693
Fishbein, Morris (editor): Modern home medical adviser, 818
Gibb, W. T.: Minor surgery in general practice, 268
Goldthwait, Joel E.: Body mechanics in the study and treatment of disease, 268

INDEX TO VOLUME 18

- Goldzieher, Max: Practical endocrinology, 268
 Harnes, Alvin R.: Clinical management of syphilis, 420
 Hatcher, Robert A., and Eggleston, Cary: Useful drugs, 328
 Hertzler, Arthur E., and Chesky, Victor B.: Surgery of a general practice, 817
 Kessler, Henry H.: The crippled and disabled, 329
 Loeb, Robert F.: Martinis' principles and practice of physical diagnosis (translated by George J. Farber), 330
 Miller, C. Jeff: Clinical gynecology, 328
 Pardee, Harold E. B.: What you should know about heart disease, 329
 Pemberton, Ralph: Rheumatoid conditions and chronic arthritis, 692
 Prinz, Herman: Diseases of the mouth and their treatment, 490
 Springstun, Humphreys: Doctors and juries, 490
 Sutton, Richard L.: Introduction to dermatology, 329
 Sutton, Richard L., and Sutton, Richard L., Jr.: Diseases of the skin, 419
 Tandy, Elizabeth C.: Comparability of maternal mortality rates in the United States and certain foreign countries, 329
 Zinsser, Hans: Textbook of bacteriology, 64

C

- Campbell, Orwood J.: The treatment of fractures of the lower end of the humerus, 192
 Cancer, Annual symposium on, Minneapolis Surgical Society, 409 and 481
 Cancer of the breast, Ten years of surgery for, 131
 Carcinoma of the colon, Pathologic factors in the curability of, 212
 Carcinoma of the rectum and sigmoid, Electrocoagulation of, 487
 Carcinoma of the stomach, 484
 Carcinoma of the stomach, The modes of onset and symptoms of, 586
 Carcinoma, Tumors simulating — Schüller-Christian's disease or xanthomatosis, 627
 Cardiac emergencies, Treatment of, 455
 Care of the allergic child, The, 292
 Carlson, Herbert A.: Variations in the technic of thoracoplasty, 262
 Carpal navicular bone, Fractures of the, 81
 Cerebral vascular crises, 436
 Cesarean section, A study of the mortality of premature infants delivered by, 590
 Chatterton, C. C.: Acute fractures of the spine, 88
 Cholecystography by the oral method, Value of, with an analysis of 189 operated cases, 269
 Christianson, Harry W.: Anal abscess and anal fistula, 655
 Chronic ulcerative colitis among elderly persons, 583
 Church, Gerald T., and Walters, Waltman: Gastritis, a phenomenon of pyloric obstruction and its relation to duodenal ulcer, 206
 Circulation, peripheral, Disturbances in, 139
 Clefts, Congenital, of the face and jaws (discussion), 406
 Clinical application of the ovarian follicular hormone, The, 69
 Clinical studies in juvenile rheumatism, 370
 Clinical tuberculosis among employees of local institutions caring for tuberculosis patients, 452
 Cole, Wallace H., and Williamson, George A.: Fractures of the carpal navicular bone, 81
 Colitis, Chronic ulcerative, among elderly persons, 583
 Collins, Arthur N., and Berdez, George L.: Ossifying hemangio-endothelioma (case report), 157
 Colon, Diverticulosis and diverticulitis of the, 319
 Colon, Pathologic factors in the curability of carcinoma of the, 212

- Community versus tuberculosis, The, 561
 Congenital clefts of the face and jaws, The (discussion), 406
 Congenital obstruction of the third portion of the duodenum in a two year old boy. Operation with recovery, 60
 Continuous intravenous infusion, 778
 Coronary sclerosis, Electrocardiography as a diagnostic adjunct in the anginal syndrome of, 20
 Contribution to our understanding of the mechanism of hypertensive encephalopathy and treatment in a certain group of these cases (discussion), 406
 Convalescent Serum Center, The Milwaukee, 541
 Coronary occlusion, The prognosis and treatment of, 710
 Correlation of x-ray heart shadows with clinical and autopsy findings, 724
 Counsellor, Virgil S., and Randall, Lawrence M.: Treatment of pelvic inflammation by heat: indications and results, 1
 Coventry, W. A., Photograph, 35
 Coventry, W. A., and Moe, Russell J.: Ten years of surgery for cancer of the breast, 131
 Craig, Winchell McK., Adson, Alfred W., and Brown, George E.: The treatment of severe essential hypertension, 134
 Creevy, C. D.: Litholapaxy, 262
 Criteria of operability for goiter, 631
 Current events in anesthesia, 261
 Cutis verticis gyrata formation, 536
 Cutler, Elliott C.: Total thyroidectomy for heart disease, 421

CORRESPONDENCE

- Aitkins, H. B., 46
 Goldstein, Hyman I., 170

D

- Davis, William: The diamond jubilee of the Ramsey County Medical Society, 386
 Detachment of the retina (moving picture demonstration), 258
 Diabetic gangrene, Report of three cases of, 127
 Diamond jubilee of the Ramsey County Medical Society, The, 386
 Disability estimation, Fracture, 195
 Disturbance in function of the parathyroid glands of children, 107
 Disturbances in peripheral circulation, 139
 Diverticulosis and diverticulitis of the colon, 319
 Dunn, George R.: Treatment of fractures of the os calcis, 183
 Duodenum, Congenital obstruction of the third portion of, in a two year old boy. Operation with recovery, 60.
 Duodenum, Non-operative treatment of localized perforations of the (abstract), 477
 Dysmenorrhea, 525

E

- Earl, Robert: Treatment of head injuries, 521
 Effects of early postoperative feeding, The, 382
 Effects of sodium and potassium salts on carbohydrate metabolism and blood pressure, The, 257
 Eitel, George D.: Fracture dislocation of the shoulder, 191
 Eitel, George D.: Ingested foreign bodies in the gastrointestinal tract requiring surgical removal, 52
 Elbow, Supracondylar fractures of the, and their complications, 597
 Electrocardiography as a diagnostic adjunct in the anginal syndrome of coronary sclerosis, 20
 Electrocoagulation of carcinoma of the rectum and sigmoid, 487

INDEX TO VOLUME 18

- Embolism, Pulmonary fat, 636
 Engberg, E. J.: The palliative treatment of tic douloureux, 229
 Eruptions, Phenolphthalein, 782
 Erythremia, familial and non-familial, Influence of gastric lavage on, 499
 Esophagus, Localization of bones in the, by roentgenoscopy (case report), 240
 Essential hypertension and tuberculosis, 738
 Essential thrombocytopenic purpura, 15
 Evaluation of the treatment of duodenal ulcer, The, 554
 Evans, Edward T.: The treatment of non-union fracture of the hip, 93
 Exley, E. W.: Unusually large bilateral renal calculi (case report), 303
 External fronto-ethmo-sphenoid operation, The, 786
- EDITORIAL**
- A. M. A. delegates meet, 161
 Annals of medical history, 244
 Bone marrow biopsy, 798
 Canucks and Yanks meet, 465
 Cigarette smoking, 37
 Clinic criticized, 244
 Convalescent serum centers, 543
 Council on Pharmacy and Chemistry, 799
 Demonstrations at the state meeting, 544
 Dimitrophenol, 601
 Editorial staff increased, 160
 Editor's dilemma, 306
 Extension courses, 306, 670
 Fifty years after Trudeau, 36
 Football injuries, 602
 Great leader (Dr. Herman M. Johnson), 466
 Hay fever in 1935, 748
 In memoriam, 112
 McCrae, Thomas, 671
 May Day and diphtheria immunization, 244
 Medical solidarity, 160
 New tests of hepatic function, 464
 Part-pay and full-pay patients, 748
 Poliomyelitis in 1935, 670
 Ramsey County diamond jubilee, 386
 Scarlet fever incidence, 305
 Simplified diphtheria prevention, 111
 Snake bite, 603
 Social idealism, 111
 Socialization of medicine, 797
 State meeting, The, 385
 State sickness insurance, 36
 "Throw-away" medical magazines, 749
 Tularemia, 601
 Typhoid increase, 543
 Vitamin D milk, 243
 Wilder, Lucretia, memorial, 305
- F**
- Factors contributing to the further reduction of tuberculous infection, 280
 Fahr, George: A contribution to our understanding of the mechanism of hypertensive encephalopathy and treatment in a certain group of these cases (discussion), 406
 Fatigue, Non-organic causes of, 531
 Feeding, early postoperative, The effects of, 382
 Femur, Fractures of the neck of the, 185
 Fibula, Fractures of the shaft of the tibia and, 94
 Fistula, anal, Anal abscess and, 655
 Fluoroscopy, The inception and development of: The influence of Carmant on its status in America, 699
 Foley, Frederic E. B.: Operative division of the horse-shoe kidney, 176
 Foreign bodies, Ingested, in the gastro-intestinal tract requiring surgical removal, 52
 Foreign body, An unusual pharyngo-esophageal, and its removal (case report), 304
- G**
- Gall bladder disease, 123
 Gangrene, cutaneous, following scarlet fever, Multiple areas of, 154
 Gangrene, diabetic, Report of three cases of, 127
 Gastric lavage, Influence of, on familial and non-familial erythremia, 499
 Gastritis, a phenomenon of pyloric obstruction and its relation to duodenal ulcer, 206
 Gastro-duodenal area, Acute perforations of the, with special reference to those of traumatic origin (case report), 238
 Geer, Everett K.: Oleothorax: a report of its use in twenty cases, 576
 General medicine, The borderline between neuro-psychiatry and, 26
 Gillespie, M. G.: The ambulant treatment of varicose veins by ligation, division and injection of the distal segment, 592
 Goetsch, Emil: Criteria of operability for goiter, 631
 Goiter, Criteria of operability for, 631
 Graduate medical education of certain sorts in Minnesota (abstract), 557
 Gray, Howard K.: Postoperative pulmonary complications and postoperative use of the Trendelenburg position, 273
 Grimes, Burton P., and Michael, Joseph C.: Attempted suicide, 148
 Gross structural changes in the adult heart and aorta as seen in the roentgen ray film and their correlation with clinical and autopsy findings (abstract) 475
- H**
- Hammes, E. M.: Cerebral vascular crises, 436
 Hammes, E. M.: Spinal cord injuries (abstract), 815
 Hanson, William A., and Fowler, L. Haynes: Megacolon, 646

INDEX TO VOLUME 18

- Hanson, W. A., and Fowler, L. H.: Tumors simulating carcinoma—Schüller-Christian's disease or xanthomatosis, 627
- Hardgrove, Maurice: The Milwaukee Convalescent Serum Center, 541
- Hart, Vernon L.: Intra-articular fractures of the ankle resulting from indirect violence, 97
- Hart, Vernon L.: Subastragaloïd and triple arthrodesis, 260
- Hastings, D. R.: The safeness of artificial pneumothorax as therapeutic treatment in pulmonary tuberculosis, 580
- Hawkinson, L. F.: The clinical application of the ovarian follicular hormone, 69
- Head injuries, Treatment of, 521
- Heart and aorta, adult, Gross structural changes in the, as seen in the roentgen ray film, and their correlation with clinical and autopsy findings (abstract) 475
- Heart disease, Total thyroidectomy for, 421
- Heart shadows, x-ray, Correlation of, with clinical and autopsy findings, 724
- Hedberg, G. A.: A study of tuberculosis in families, 276
- Hemangio-endothelioma, Ossifying (case report), 157
- Hemangiomas, cavernous, The treatment of some types of arterio-venous aneurysms and, 260
- Hemorrhage in obstetrics, 4
- Henderson, M. S.: Acute atrophy of bone (abstract), 814
- Henrikson, E. C., and Froehlich, H. W.: Sodium ricinoleate as a sclerosing agent, 594
- Henry, Myron O.: Supracondylar fractures of the elbow and their complications, 597
- Henry, Myron O.: Treatment of fresh fractures of the hip, 91
- Hernias, abdominal, The use of living sutures in the repair of, 365
- Hernia, The ambulant treatment of, 441
- Hernia, The rationale of the injection treatment of, 623
- Herpes zoster ophthalmicus, 741
- Hilding, Anderson: Angioid streaks of the retina associated with pseudoxanthoma elasticum, 599
- Hilding, Anderson C.: Lysozyme: One of the natural defense factors of the eye, 360
- Hip, The treatment of non-union fracture of the, 93
- Hip, Treatment of fresh fractures of the, 91
- Hirschboeck, Frank J.: The borderline between neuro-psychiatry and general medicine, 26
- Historical notes of the Minnesota Valley Medical Association and the Southern Minnesota Medical Association, 491
- History of the development of surgery for peptic ulcer, The, 351
- Hochfilzer, John J.: Traumatic arteriovenous aneurysm of right superficial temporal artery and vein (case report), 158
- Hodgkin's disease, Biological phenomena in, 263
- Hoff, Alfred: Correlation of x-ray heart shadows with clinical and autopsy findings, 724
- Hoff, Alfred: Gross structural changes in the adult heart and aorta as seen in the roentgen ray film and their correlation with clinical and autopsy findings (abstract), 475
- Hoffman, Max H.: The present status of our knowledge of the adrenal gland, 66
- Holmes, Fred G.: Tuberculosis, 560
- Hormone, ovarian follicular, The clinical application of the, 69
- Hormone, Suprarenal cortical, 71
- Horseshoe kidney with complications, 61
- Humerus, The treatment of fractures of the lower end of the, 192
- Hyperparathyroidism (Borg), 65
- Hyperparathyroidism (Webb), 664
- Hypertension, Essential, and tuberculosis, 738
- Hypertension, essential, The management of, 354
- Hypertension, Malignant—splanchnic nerve resection (case report), 242
- Hypertension, severe essential, The treatment of, 134
- Hyperthyroidism in children, 50
- Hyperinsulinism, The surgery of, 265
- Hyperthyroidism and hyperparathyroidism, Some of the newer developments in, 761
- I**
- Idiopathic hypochromic anemia, 504
- Ikeda, Kano: Pulmonary fat embolism, 636
- Inception and development of fluoroscopy: The influence of Carman on its status in America, 699
- Infants, premature, delivered by cesarean section, A study of the mortality of, 590
- Influence of gastric lavage on familial and non-familial erythremia, 499
- Ingested foreign bodies in the gastro-intestinal tract requiring surgical removal, 52
- Injection treatment of hernia, The rationale of the, 623
- In Memoriam (see Obituary)
- Insomnia, 143
- Intra-articular fractures of the ankle resulting from indirect violence, 97
- Intramedullary tumor of the spinal cord (case report), 462
- Intravenous infusion, Continuous, 778
- J**
- Jennings, Frank L.: Factors contributing to the further reduction of tuberculous infection, 280
- Johnson, James A.: Electrocoagulation of carcinoma of the rectum and sigmoid, 487
- Johnson, Norman: Non-organic causes of fatigue, 531
- Jones, William R.: Diverticulosis and diverticulitis of the colon, 319
- Judd, E. Starr: The history of the development of surgery for peptic ulcer, 351
- K**
- Kamman, Gordon R.: Insomnia, 143
- Keith, Norman M., and Binger, Melvin W.: Ascites of indeterminate origin, 510
- Kendall, Edward C.: Suprarenal cortical hormone, 71
- Kennedy, Roger L. J.: Disturbance in function of the parathyroid glands of children, 107
- Keratoma senile, Verucca senilis and, 735
- Kidney, horseshoe, Operative division of the, 176
- Kidney, Horseshoe, with complications, 61
- Kidney injuries, Management of, 283
- Knight, Ralph T.: Current events in anesthesia, 261
- Koenigsberger, C.: Malignant hypertension—splanchnic nerve resection (case report), 242
- Kohlbry, Carl O.: Essential thrombocytopenic purpura, 15
- L**
- Lahey, Frank H.: Some of the newer developments in hyperthyroidism and hyperparathyroidism, 761
- Laird, A. T.: Clinical tuberculosis among employees of local institutions caring for tuberculosis patients, 452
- Lang, Leonard A.: Late toxemias of pregnancy, 287
- Larson, Lawrence M.: Pathologic factors in the curability of carcinoma of the colon, 212
- Late results in a case of arthroplasty of both hip joints for painful ankylosing arthritis, 553
- Late toxemias of pregnancy, 287
- La Vake, R. T.: Hemorrhage in obstetrics, 4
- Laymon, Carl W.: Phenolphthalein eruptions, 782
- Laymon, Carl W., and Sweitzer, S. E.: Multiple areas of cutaneous gangrene following scarlet fever, 154
- Leven, N. Logan: Visualization of the biliary tract by injection of radio-opaque media postoperatively, 259

INDEX TO VOLUME 18

- Lillie, Harold I., and Williams, Henry L.: The external fronto-ethmo-sphenoid operation, 786
- Litholopaxy, 262
- Localization of bones in the esophagus by roentgenoscopy, The, (case report), 240
- Lysozyme: One of the natural defense factors of the eye, 360
- M**
- McQuarrie, Irvine: The effects of sodium and potassium salts on carbohydrate metabolism and blood pressure, 257
- Madden, John F.: Cutis verticis gyrata formation, 536
- Magath, Thomas B., and Brown, Philip W.: Amebiasis: diagnosis, prevention and treatment, 515
- Malignancy, Organization of hospital service for diagnosis and treatment of, 481
- Malignant hypertension—splanchnic nerve resection (case report), 242
- Malignant tumors of the thyroid gland, 412
- Malignant tumors of the urinary tract, 416
- Malunited fracture of the lower end of the radius (Colles' fracture) treated by osteotomy, 84
- Management of essential hypertension, The, 354
- Management of kidney injuries, 283
- Manson, Melville H.: Biological phenomena in Hodgkin's disease, 263
- Masson, James C.: The use of living sutures in the repair of abdominal hernias, 365
- Maxeiner, Stanley R.: Carcinoma of the stomach, 484
- Medical aspects of the commoner industrial poisonings, 234
- Medical economics, 39, 114, 163, 246, 308, 389, 468, 546, 606, 672, 720, 800
- Megacolon, 646
- Melanoma, 409
- Menopausal and post-menopausal bleeding, 12
- Merkert, Charles E.: Tetanus, 613
- Metabolism, carbohydrate, and blood pressure, The effects of sodium and potassium salts on, 257
- Meyerding, Henry W., and Overton, Lewis M.: Malunited fracture of the lower end of the radius (Colles' fracture) treated by osteotomy, 84
- Michael, Joseph C., and Grimes, Burton P.: Attempted suicide, 148
- Middleton, William S.: The prognosis and treatment of coronary occlusion, 710
- Milwaukee Convalescent Serum Center, 541
- Minnesota Valley Medical Association and Southern Minnesota Medical Association, Historical notes of the, 491
- Modes of onset and symptoms of carcinoma of the stomach, The, 586
- Moe, John H.: Fractures of the shaft of the tibia and fibula, 94
- Moe, Russell J., and Coventry, W. A.: Ten years of surgery for cancer of the breast, 131
- Moersch, Herman J.: An unusual pharyngo-esophageal foreign body and its removal (case report), 304
- Montgomery, Hamilton: Verucca semilis and keratoma senile, 735
- Morlock, Carl G.: Essential hypertension and tuberculosis, 738
- Morrow, James: Acute perforations of the gastro-duodenal area, with special reference to those of traumatic origin (case report), 238
- Multiple areas of cutaneous gangrene following scarlet fever, 154
- Mumps meningo-encephalitis, 377
- Myers, Thomas: Pathologic conditions in the newborn, 658
- MEDICAL ECONOMICS**
- Advice from Chicago, 390
- Anti-vivisection is real menace—Dr. McEachern, 114
- As to health insurance, 115
- Chicago storm center, 311
- College of Surgeons conforms, 469
- Community is liable—Attorney General Peterson, 164
- Concerning birth control, 754
- Concerning the foundations, 167
- Council meets, The, 41, 252, 550, 754
- Counting sick men, 753
- County officers meeting, 117, 247
- County society plans, 389
- Debating state medicine, 672
- Delayed relief bills, 609
- Detroit is grateful, 120
- Distribution of physicians, 611
- "Doorbell Census," 680
- Doorbell survey in Minnesota, 751
- Economical Ashland, 43
- Fishbein, Dr., speaking, 39
- For orderly progress, 807
- For public health, 610
- Getting ready to hunt illness, (Doorbell health survey), 800
- Great meeting (82nd annual meeting M. S. M. A.), 468
- High schools debate state medicine, 606
- High school debates, 750
- Hospitalization by county boards, 610
- Hospital week-ends, 753
- "How can a city say thank you?" 166
- "Inpatient facts" (Health survey), 801
- Important (Change in method of handling relief), 469
- Important to members (new laws)
- Hospitalization of the indigent, 393
- Reporting injuries inflicted by firearms, 393
- Individual physician must help, 311
- Inevitable reactions (Compulsory health insurance in California), 395
- In explanation of the California situation, 309
- In operation now (Special payment plans), 390
- "Insurance studied," 680
- List of physicians licensed, 253, 396, 612
- May Day campaign, 310
- Medical care of WPA workers, 608
- Medical economics at Harvard, 313
- Medical Pollyannas in California, 246
- Medical practice in Utah, 119
- Medical reporter (Oregon), 311
- Medicine must lead, 43
- Minnesota comes of age, 169
- Minnesota's own handbook for debaters, 805
- Minnesota State Board of Medical Examiners, 45, 169, 252, 314, 395, 472, 611, 756, 809
- More about German Health Insurance, 394
- Mr. Kingsbury leaves the Milbank Fund, 395
- New plans (Special report by Dr. Leland of Bureau of Medical Economics, at A. M. A. meeting), 470
- New policy (Summer round-up of children), 678
- New prospects for public health in Minnesota, 801
- New society (Dakota County), 472
- New York's "gradient plan," 755
- "No jump in the dark" (Social experiments), 246
- Northwest Conference, 118, 250
- On privileged information, 752
- Optical code, 608
- Passed by the House of Delegates (Minnesota State Medical Association), 546
- Questionnaire (Compulsory sickness insurance), 308
- Questionnaire (Health insurance), 115
- Relief and WPA, 675
- Report of the Judicial Council, 471
- Report of the President (President Roosevelt's message on social security), 114
- Seen by the Secretary, 44
- SERA, 608
- SERA education, 394
- Shoulder to shoulder (British Columbia and Canadian Medical Associations—sickness insurance), 679
- Sickness insurance—Mr. Witte, 312

INDEX TO VOLUME 18

Sickness insurance is huge octopus—C. W. Mayo, 607
 Some causes of professional unrest, 116
 Special session (A. M. A. House of Delegates), 163
 State medicine—Glenn Frank, 679
 State meeting, 120
 Survey (medical relief), 677
 Teaching economics, 472
 To improve the public health, 166
 Trend of legislative opinion, 468
 Wadena's plan (relief problems), 677
 Washington's plan, 807
 Watch! (Surveys of health and medical services), 679
 What can I do for my county and state medical society? 672, 750, 800
 What the editors say, 755
 What the masses want, 42
 Who is to vaccinate—and where? 806

MISCELLANEOUS

Extension course in refraction, 171
 War against tuberculosis, The, 63

N

Nathanson, M. H.: Treatment of cardiac emergencies, 455
 Nelson, Harvey: Fracture disability estimation, 195
 Neuropsychiatry and general medicine, The borderline between, 26
 Newborn, Pathologic conditions in the, 658
 Nonmalignant conditions, The radium treatment of, 789
 Non-operative treatment of localized perforations of the duodenum (abstract), 477
 Non-organic causes of fatigue, 531
 Nordland, Martin: Hyperthyroidism in children, 50
 Nordland, Martin: Malignant tumors of the thyroid gland, 412
 Nose, The broken, 101

O

Obstetric care, Simplified, 768
 Obstetrics, Hemorrhage in, 4
 Obstruction, Congenital, of the third portion of the duodenum in a two year old boy. Operation with recovery. Case report, 60
 Oerding, Harry, and Briggs, John Francis: Influence of gastric lavage on familial and non-familial erythremia, 499
 Oleothorax: a report of its use in twenty cases, 576
 Olson, F. A.: Organization of hospital service for diagnosis and treatment of malignancy, 481
 Olson, Paul F., and Walters, Waltman: Papillary colloid adenocarcinoma of the extrahepatic bile ducts (case report), 460
 Operative division of the horseshoe kidney, 176
 Organization of hospital service for diagnosis and treatment of malignancy, 481
 Orr, Thomas G.: Continuous intravenous infusion, 778
 Os calcis, Treatment of fractures of the, 183
 Ossifying hemangio-endothelioma (case report), 157
 Osteotomy, Malunited fracture of the lower end of the radius (Colles' fracture) treated by, 84
 Ovarian follicular hormone, The clinical application of the, 69
 Overton, Lewis M., and Meyering, Henry W.: Mal-united fracture of the lower end of the radius (Colles' fracture) treated by osteotomy, 84

OBITUARY

Bullen, Frank Wright, 682
 Caine, Arthur T., 682
 Caldwell, Kenneth Simms, 46
 Gates, C. E., 545
 Halloran, Florence John, 170
 Hedding, Joseph Albert, 122

Johnson, Herman M., 467, 545
 Kilbourne, Arthur F., 122
 Lewis, William W., 682
 Lumley, William Alison, 397
 McCloud, Charles Naumann, 605
 Mann, Arthur T., 397
 Miller, M. J., 467
 O'Connor, Patrick Henry, 170
 Smith, Edwin H., 605
 Smith, E. K., 170
 Swenson, Charles, 545
 Wellcome, Jacob Welcome Bray, 122

P

Palliative treatment of tic douloureux, The, 229
 Papillary colloid adenocarcinoma of the extrahepatic bile ducts (case report), 460
 Parathyroid glands of children, Disturbance in function of the, 107
 Pathological fractures, 187
 Pathologic conditions in the newborn, 658
 Pathologic factors in the curability of carcinoma of the colon, 212
 Pelvic inflammation, Treatment of, by heat: indications and results, 1
 Peptic ulcer, The history of the development of surgery for, 351
 Perforations, Acute, of the gastro-duodenal area, with special reference to those of traumatic origin (case report), 238
 Peterson, Thorvald: Gallbladder disease, 123
 Peterson, Willard C.: Report of three cases of diabetic gangrene, 127
 Peyton, William T.: The treatment of some types of arterio-venous aneurysms and cavernous hemangiomas, 260
 Phenolphthalein eruptions, 782
 Physicians, Side-view sketches of, 567
 Piper, Monte C.: Historical notes of the Minnesota Valley Medical Association and the Southern Minnesota Medical Association, 491
 Pituitary gland, A basophilic adenoma of the, 73
 Plass, E. D.: Simplified obstetric care, 768
 Pneumothorax, artificial, as therapeutic treatment in pulmonary tuberculosis, The safeness of, 580
 Poisonings, commoner industrial, Medical aspects of the, 234
 Poisonings, commoner industrial,—lead, arsenic and carbon monoxide, The treatment of the, 236
 Postoperative feeding, early, The effects of, 382
 Postoperative pulmonary complications and postoperative use of the Trendelenburg position, 273
 Pregnancy, Late toxemias of, 287
 Preoperative, operative and postoperative technic of prostatic resection with the direct vision cold knife instrument, The, 218
 Present status of clinical allergy, The, 773
 Present status of our knowledge of the adrenal gland, The, 66
 Prevention of whooping cough with bacillus pertussis vaccine, The, 695
 Prognosis and treatment of coronary occlusion, The, 710
 Prognosis in fractures of the skull, 187
 Prostatic resection, The preoperative, operative and postoperative technic of, with the direct vision cold knife instrument, 218
 Prostatic resection, Transurethral, 224
 Pseudoxanthoma elasticum, Angiod streaks of the retina associated with, 599
 Purpura, Essential thrombocytopenic, 15
 Placenta previa, Roentgenologic diagnosis of, 9
 Pulmonary complications, Postoperative, and postoperative use of the Trendelenburg position, 273
 Pulmonary fat embolism, 636
 Pyloric obstruction, Gastritis, a phenomenon of; and its relation to duodenal ulcer, 206
 Pyrethrum in the treatment of scabies, 793

INDEX TO VOLUME 18

R

- Radium treatment of nonmalignant conditions, The, 789
 Radius, Fractures of the lower end of the, 78
 Radius, Malunited fracture of the lower end of the, (Colles' fracture) treated by osteotomy, 84
 Randall, Lawrence M., and Counsellor, Virgil S.: Treatment of pelvic inflammation by heat: indications and results, 1
 Rationale of the injection treatment of hernia, The, 623
 Rectum and sigmoid, Electrocoagulation of carcinoma of the, 487
 Reed, Charles A.: Fractures of the lower end of the radius, 78
 Reflex urinary frequency (abstract), 816
 Regnier, E. A.: Case report: Congenital obstruction of the third portion of the duodenum in a two year old boy. Operation with recovery, 60
 Regnier, E. A.: Fractures of the neck of the femur, 185
 Renal calculi, Unusually large bilateral (case report), 303
 Report of three cases of diabetic gangrene, 127
 Retina, Angioid streaks of the, associated with pseudoxanthoma elasticum, 599
 Retina, Detachment of the (moving picture demonstration), 258
 Retinal detachment, 201
 Rheumatism, juvenile, Clinical studies in, 370
 Rice, Carl O.: The rationale of the injection treatment of hernia, 623
 Ritchie, Harry P.: Congenital clefts of the face and jaws, The (discussion), 406
 Robb, E. F.: A study of the mortality of premature infants delivered by cesarean section, 590
 Roentgenologic diagnosis of placenta previa, 9

S

- Safeness of artificial pneumothorax as therapeutic treatment in pulmonary tuberculosis, The, 580
 Sauer, Louis: The prevention of whooping cough with bacillus pertussis vaccine, 695
 Scabies, Pyrethrum in the treatment of, 793
 Scarlet fever, Multiple areas of cutaneous gangrene following, 154
 Schons, Edward: Value of cholecystography by the oral method, with an analysis of 189 operated cases, 269
 Schüller-Christian's disease or xanthomatosis—Tumors simulating carcinoma, 627
 Schwartz, Virgil J.: The broken nose, 101
 Schwyzer, Arnold: Late results in a case of arthroplasty of both hip joints for painful ankylosing arthritis, 553
 Sclerosing agent, Sodium ricinoleate as a, 594
 Sepsis, Blood transfusion in the treatment of, 30
 Shaperman, E., and Stoesser, A. V.: The care of the allergic child, 292
 Shapiro, Gertrude K., and Shapiro, M. J.: Clinical studies in juvenile rheumatism, 370
 Shapiro, M. J., and Shapiro, Gertrude K.: Clinical studies in juvenile rheumatism, 370
 Shoulder, Fracture dislocation of the, 191
 Side-view sketches of physicians, 567
 Sigmoid, Electrocoagulation of carcinoma of the rectum and, 487
 Simplified obstetric care, 768
 Sinusitis, frontal, Some observations on the intranasal operation for, 744
 Skull, Prognosis in fractures of the, 187
 Smith, Arthur Edward: Fundus examination in short wave-length light (abstract), 175
 Sodium ricinoleate as a sclerosing agent, 594
 Sohlberg, Olof I.: The effects of early postoperative feeding, 382
 Some observations on the intranasal operation for frontal sinusitis, 744

- Some of the newer developments in hyperthyroidism and hyperparathyroidism, 761
 Southern Minnesota Medical Association, Historical notes of the Minnesota Valley Medical Association and the, 491
 Spinal cord injuries (abstract), 815
 Spinal cord, Intramedullary tumor of the (case report), 462
 Spine, Acute fractures of the, 88
 Spratt, C. N.: Detachment of the retina (moving picture demonstration), 258
 Stewart, David A.: The community versus tuberculosis, 561
 Stoesser, A. V., and Shaperman, E.: The care of the allergic child, 292
 Stomach, Carcinoma of the, 484
 Stomach, The modes of onset and symptoms of carcinoma of the, 586
 Study of the mortality of premature infants delivered by cesarean section, 590
 Study of tuberculosis in families, A, 276
 Subastragaloïd and triple arthrodesis, 260
 Suicide, Attempted, 148
 Supracondylar fractures of the elbow and their complications, 597
 Suprarenal cortical hormone, 71
 Surgery of hyperinsulinism, The, 265
 Sweetser, Theodore H.: Case report: Horseshoe kidney with complication, 61
 Sweetser, Theodore H.: Malignant tumors of the urinary tract, 416
 Sweetser, Theodore H.: Management of kidney injuries, 283
 Sweitzer, S. E., and Laymon, Carl W.: Multiple areas of cutaneous gangrene following scarlet fever, 154
 Sweitzer, S. E., and Tedder, J. W.: Pyrethrum in the treatment of scabies, 793

SOCIETIES

- American Association for the Study of Goiter, 315
 American Association of Mental Deficiency, 254
 American College of Surgeons, North Central Section, 172, 317
 American Congress of Physical Therapy, 129
 American Neisserian Medical Society, 172
 American Urological Association, 315
 Blue Earth Valley Medical Society, 48
 Clay-Becker County Medical Society, 48
 College of Surgeons sectional meeting, 128
 Duluth Surgical Society, 812
 Great Northern Railway Surgeons' Association, 404
 Interchange lectures at Rochester, 129
 International Association for Dental Research, 173
 Jackson, Clarence Martin, lectureship, 128
 Kandiyohi—Swift—Meeker County Society, 173, 255
 Mayo Foundation lectures, 129
 Medical broadcast, 48, 128, 172, 254, 315, 404, 558, 684, 759, 812
 Minneapolis Surgical Society, 48, 255, 316
 Minneapolis Surgical Society, Transactions of, 52, 123, 183, 259, 319, 409, 481, 613
 Cancer symposium, 409 and 481
 Fracture symposium, 183
 Minnesota Academy of Medicine, Proceedings, 50, 406, 475, 552, 813
 Minnesota Dermatological Society, 255
 Minnesota Radiological Society, 129, 316, 558
 Minnesota Society of Internal Medicine, 316, 812
 Minnesota State Board of Medical Examiners, 473
 Minnesota State Medical Association, 173, 254, 315, 399, 473, 558, 685, 759
 Proceedings, House of Delegates, 685
 Program, 399
 Mississippi Valley Medical Society, 404, 473
 Nicollet-LeSueur County Medical Society, 173, 316
 Northern Minnesota Medical Association, 317, 474, 558, 684

INDEX TO VOLUME 18

- Range Medical Society, 474
 Red River Valley Medical Society, 48, 812
 Redwood-Brown County Medical Society, 405, 474
 Renville County Medical Society, 812
 Rice County Medical Society, 255, 405, 759
 St. Louis County Medical Society, 405
 Saint Paul Surgical Society, 812
 Scott-Carver County Medical Society, 405, 558, 684
 Sixth Councilor District meeting, 759
 Southeastern Surgical Congress, 48
 Southern Minnesota Medical Association, 474, 558
 Stearns-Benton County Medical Society, 174, 255
 Union Hospital staff meeting, 129, 174
 University extension course in refraction, 684
 Upper Mississippi Medical Society, 174, 405, 759
 Wabasha County Medical Society, 559
 Wabasha and Winona County Medical Societies, 255
 Washington County Medical Society, 48, 405
 Woman's Auxiliary, 49, 129, 174, 267, 318, 408, 760, 812

T

- Ten years of surgery for cancer of the breast, 131
 Tetanus, 613
 Thomas, Gilbert J.: The preoperative, operative and postoperative technic of prostatic resection with the direct vision cold knife instrument, 218
 Thompson, Gershon J.: Transurethral prostatic resection, 224
 Thoracoplasty, Variations in the technic of, 262
 Thyroidectomy, Total, for heart disease, 421
 Thyroid gland, Malignant tumors of the, 412
 Tibia and fibula, Fractures of the shaft of the, 94
 Tibia, Fractures of the upper end of the, involving the knee joint, 186
 Tic dououreux, The palliative treatment of, 229
 Total thyroidectomy for heart disease, 421
 Toxemias, Late, of pregnancy, 287
 Transurethral prostatic resection, 224
 Traumatic arteriovenous aneurysm of right superficial temporal artery and vein (case report), 158
 Treatment of cardiac emergencies, 455
 Treatment of fractures of the lower end of the humerus, The, 192
 Treatment of fractures of the os calcis, 183
 Treatment of fresh fractures of the hip, 91
 Treatment of head injuries, 521
 Treatment of non-union fracture of the hip, The, 93
 Treatment of pelvic inflammation by heat: indications and results, 1
 Treatment of severe essential hypertension, The, 134
 Treatment of some types of arteriovenous aneurysms and cavernous hemangiomas, 260
 Treatment of the commoner industrial poisonings—lead, arsenic and carbon monoxide, 236
 Trendelenburg position, Postoperative pulmonary complications and postoperative use of the, 273
 Tuberculosis, Clinical, among employees of local institutions caring for tuberculosis patients, 452
 Tuberculosis in families, A study of, 276
 Tuberculosis, pulmonary, The safeness of artificial pneumothorax as therapeutic treatment in, 580
 Tuberculosis, The community versus, 561
 Tuberculous infection, Factors contributing to the further reduction of, 280
 Tumor, Intramedullary, of the spinal cord (case report), 462
 Tumors simulating carcinoma—Schüller-Christian's disease or xanthomatosis, 627
 Tuohy, E. L.: The management of essential hypertension, 354

U

- Ude, Walter H., and Urner, John A.: Roentgenologic diagnosis of placenta previa, 9
 Ulcer, duodenal, Gastritis, a phenomenon of pyloric obstruction and its relation to, 206

- Ulcer, duodenal, The evaluation of the treatment of, 554
 Ulcer, peptic, The history of the development of surgery for, 351
 Ulrich, Henry L.: A basophilic adenoma of the pituitary gland, 73
 Unusually large bilateral renal calculi (case report), 303
 Unusual pharyngo-esophageal foreign body and its removal (case report), 304
 Urinary frequency, Reflex (abstract), 816
 Urinary tract, Malignant tumors of the, 416
 Urner, John A., and Ude, Walter H.: Roentgenologic diagnosis of placenta previa, 9
 Use of living sutures in the repair of abdominal hernias, The, 365

V

- Value of cholecystography by the oral method, with an analysis of 189 operated cases, 269
 Variations in the technic of thoracoplasty, 262
 Varicose veins, The ambulant treatment of, by ligation, division and injection of the distal segment, 592
 Verruca senilis and keratoma senile, 735
 Vertebrae, Fractured, 189
 Vinson, Porter P., and Weber, Harry M.: The localization of bones in the esophagus by roentgenoscopy (case report), 240
 Visualization of the biliary tract by injection of radio-opaque media postoperatively, 259

W

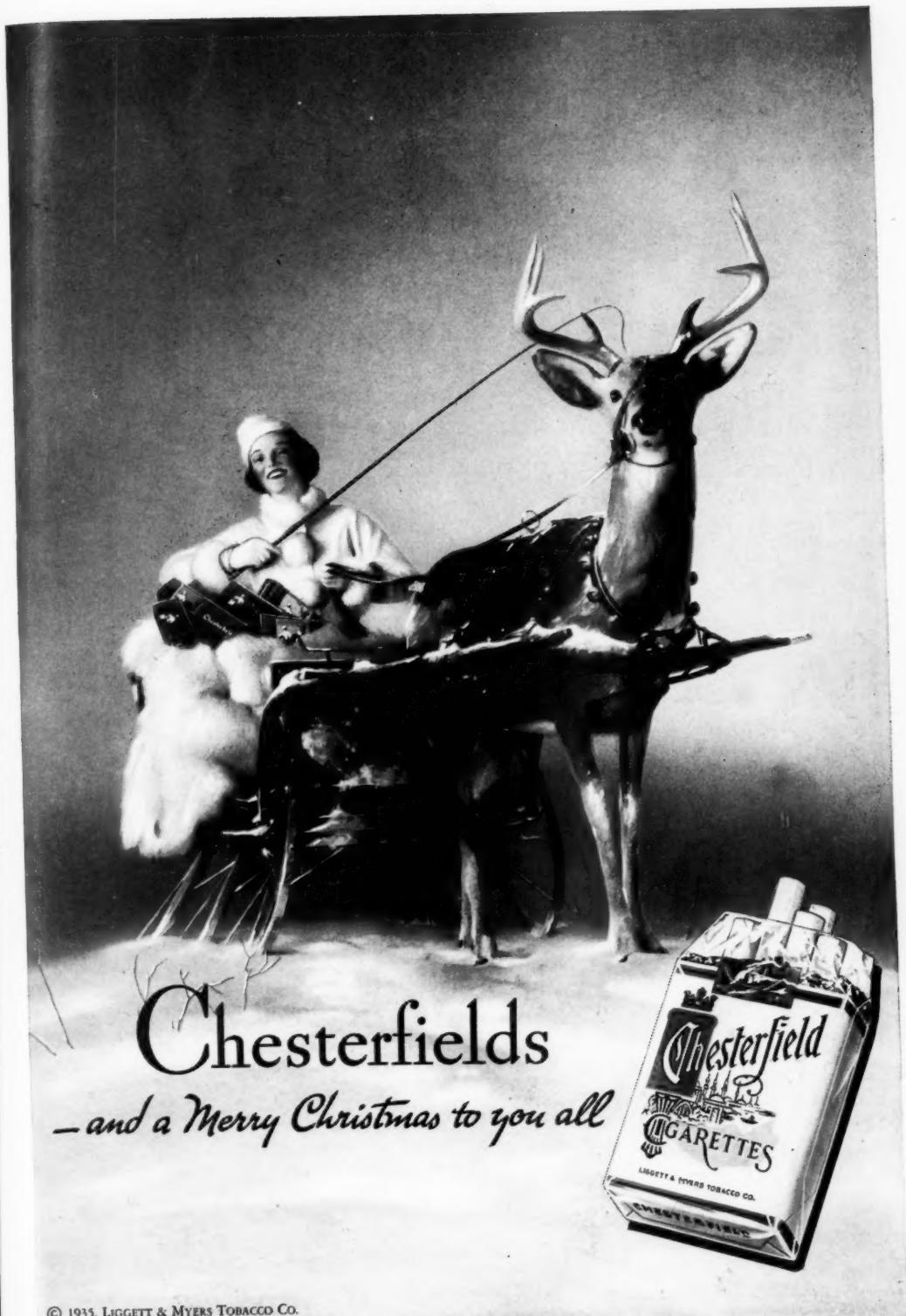
- Walters, Waltman, and Church, Gerald T.: Gastritis, a phenomenon of pyloric obstruction and its relation to duodenal ulcer, 206
 Walters, Waltman, and Olson, Paul F.: Papillary colloid adenocarcinoma of the extrahepatic bile ducts (case report), 460
 Wangensteen, Owen H.: Non-operative treatment of localized perforations of the duodenum (abstract), 477
 Wangensteen, Owen H.: The surgery of hyperinsulinism, 265
 Webb, R. C.: Fractures of the upper end of the tibia involving the knee joint, 186
 Webb, Roscoe C.: Hyperparathyroidism, 664
 Weber, Harry M., and Vinson, Porter P.: The localization of bones in the esophagus by roentgenoscopy (case report), 240
 White, W. D.: Fractured vertebrae, 189
 Whooping cough, The prevention of, with bacillus pertussis vaccine, 695
 Wilbur, Dwight L.: The modes of onset and symptoms of carcinoma of the stomach, 586
 Wilcox, Arch A.: Sideview sketches of physicians, 567
 Williams, Henry L., and Lillie, Harold I.: The external fronto-ethmo-sphenoid operation, 786
 Williamson, George A., and Cole, Wallace H.: Fractures of carpal navicular bone, 81
 Willius, Frederick A.: Electrocardiography as a diagnostic adjunct in the anginal syndrome of coronary sclerosis, 20
 Wright, F. R.: Reflex urinary frequency (abstract), 816
 Wright, Harold N.: The treatment of the commoner industrial poisonings—lead, arsenic and carbon monoxide, 236
 Wynne, H. M. N.: Menopausal and post-menopausal bleeding, 12

X

- Xanthomatosis, Schüller-Christian's disease or, Tumors simulating carcinoma, 627

Z

- Zierold, Arthur A.: Prognosis in fractures of the skull, 187



© 1935, LIGGETT & MYERS TOBACCO CO.

The MOUNDS PARK SANITARIUM

SAINT PAUL, MINNESOTA



THE ESSENTIALS for Treatment of Nervous and Mental Diseases

- 1 Specialists in diagnosis and care.
- 2 Hospital care, partial or complete isolation from former environment.
- 3 A staff of consulting physicians and surgeons.
- 4 Especially trained graduate nursing staff.
- 5 Hydrotherapy and occupational therapy.
- 6 An atmosphere of cheerfulness.

Upon request, the Sanitarium will be pleased to send the details of its service and rates.

Approved by the American College of Surgeons

MILWAUKEE SANITARIUM, Wauwatosa, Wis.

For NERVOUS DISORDERS



Maintaining the highest standards over a period of fifty years, the Milwaukee Sanitarium stands for all that is best in the care and treatment of nervous disorders. Photographs and particulars sent on request.

(Chicago Office—1823 Marshall Field Annex
Wednesdays, 1-3 P. M.)

RESIDENT STAFF

Rock Sleyter, M.D., Med. Dir.
William T. Kradwell, M.D.
Merle Q. Howard, M.D.
Carroll W. Osgood, M.D.
Benjamin A. Ruskin, M.D.

ATTENDING STAFF

H. Douglas Singer, M.D.
Arthur J. Patek, M.D.

COLONIAL HALL—

One of the 14 Units in "Cottage Plan."



is.